V20988

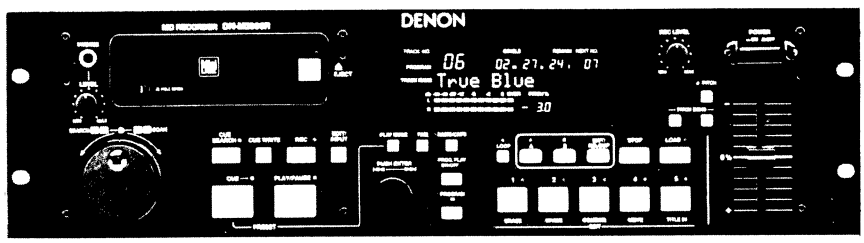
DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DN-M2000R

MD RECORDER



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NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

1. **Handle the power supply cord carefully**
   Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the top cover. If problems occur, contact your DENON dealer.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside the MD recorder. Electric shock or malfunction may result.

Please, record and retain the Model name and serial number of your set shown on the rating label.
Model No. DN-M2000R Serial No._____

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the the literature accompanying the appliance.

NOTE:
This MD recorder uses the semiconductor laser. To allow you to enjoy music at a stable operation, it is recommended to use this in a room of 5°C (41°F) –35°C (95°F).

● **FOR U.S.A. & CANADA MODEL ONLY**

CAUTION

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

LABELS (for U.S.A. model only)

CERTIFICATION

THIS PRODUCT COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER JAPPLICABLE AT DATE OF MANUFACTURE.

CAUTION:
USE OF CONTROLS OR ADJUSTMENTS OR REFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

"CLASS 1 LASER PRODUCT"

ADVARSEL: **USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.**

VAROITUSI **LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄMTTÖMÄLLE LASERSÄTEYLLE.**

VARNING– **OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.**

● **POUR LES MODELES AMERICAINS ET CANADIENS UNIQUEMENT**

ATTENTION

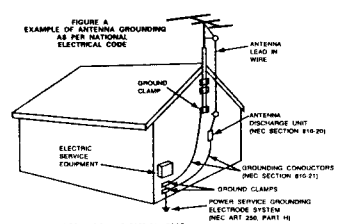
POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

SAFETY INSTRUCTIONS

1. Read Instructions – All the safety and operating instructions should be read before the applicance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warning – All warnings on the applicance and in the operating instructions should be adhered to.
4. Following Instructions – All opeerating and use instructions should be followed.
5. Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

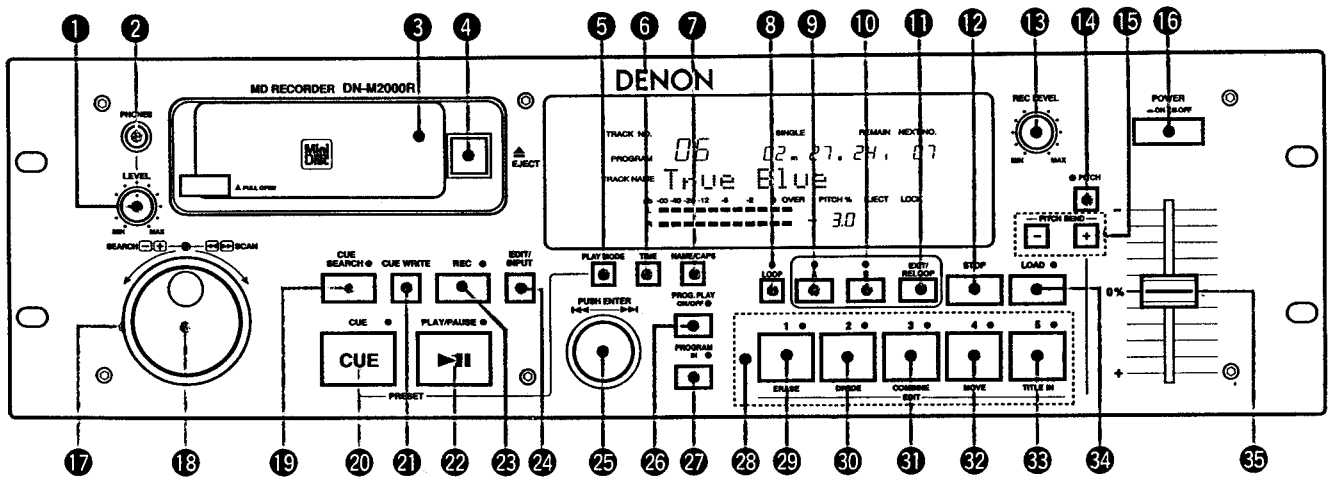
6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the applicance and cart combination to overturn.

7. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

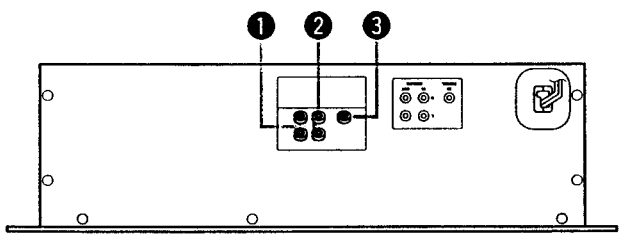


12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
14. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
15. Power Lines – An outdoor antenna should be located away from power lines.
16. Outdoor Antenna Grounding – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
17. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
18. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
19. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
20. Servicing – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

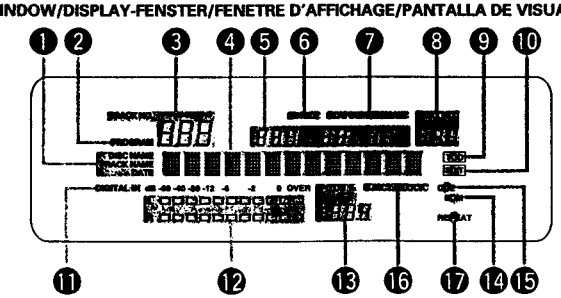
FRONT PANEL /FRONTPLATTE/PANNEAU AVANT/PANEL FRONTAL/FRAMSIDA



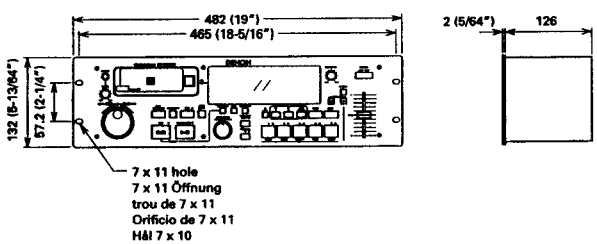
TOP PANEL/OBERES PANEL/PANNEAU SUPERIEUR/PANEL SUPERIOR/ÖVERSIDA



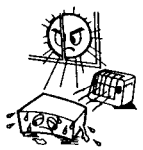
DISPLAY WINDOW/DISPLAY-FENSTER/FENETRE D'AFFICHAGE/PANTALLA DE VISUALIZACION/DISPLAYFÖNSTER



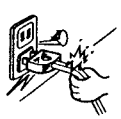
DIMENTIONS/ABMESSUNGEN/DIMENSIONS/DIMENSIÓNES/MÅTT



NOTE ON USE/HINWEISE ZUM GEBRAUCH/OBSERVATIONS RELATIVES A L'UTILISATION NOTE SULL'USO/NOTAS SOBRE EL USO/ALVORENS TE GEBRUIKEN/OBSERVERA OBSERVAÇÕES QUANTO AO USO

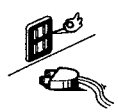


- Avoid high temperatures.
  Allow for sufficient heat dispersion when installed on a rack.
- Vermeiden Sie hohe Temperaturen.
  Beachten Sie, daß eine ausreichend Luftzirkulation gewährleistet wird, wenn das Gerät auf ein Regal gestellt wird.
- Eviter des températures élevées.
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.
- Evitate di esporre l'unità a temperature alte.
  Assicuratevi che ci sia un'adeguata dispersione del calore quando installate l'unità in un mobile per componenti audio.
- Evite altas temperaturas.
  Permite la suficiente dispersión del calor cuando está instalado en la consola.
- Vermijd hoge temperaturen.
  Zorg voor een degelijk hitteafvoer indien het apparaat op een rek wordt geplaatst.
- Undvik höga temperaturer.
  Se till att det finns möjlighet till god värmeavledning vid montering i ett rack.
- Evite temperaturas altas.
  Conceda suficiente dispersão de calor quando o equipamento for instalado numa prateleira.

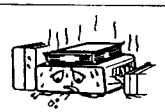


- Handle the power cord carefully.
  Hold the plug when unplugging the cord.
- Gehen Sie vorsichtig mit dem Netzkabel um.
  Halten Sie das Kabel am Stecker, wenn Sie den Stecker herausziehen.
- Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.
- Maneggiate il filo di alimentazione con cura.
  Agite per la spina quando scollegate il cavo dalla presa.
- Maneje el cordón de energía con cuidado.
  Sostenga el enchufe cuando desconecte el cordón d energía.
- Hanteer het netsnoer voorzichtig.
  Houd het snoer bij de stekker vast wanneer deze moet worden aan- of losgekoppeld.
- Hantera nätkabeln varsamt.
  Håll i kabeln när den kopplas från el-uttaget.
- Manuseie com cuidado o fio condutor de energia.
  Segure a tomada ao desconectar o fio.

- Keep the set free from moisture, water, and dust.
- Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern.
- Protéger l'appareil contre l'humidité, l'eau et la poussière.
- Tenete l'unità lontana dall'umidità, dall'acqua e dalla polvere.
- Mantenga el equipo libre de humedad, agua y polvo.
- Laat geen vochtigheid, water of stof in het apparaat binnendringen.
- Utsätt inte apparaten för fukt, vatten och damm.
- Mantenha o aparelho livre de qualquer umidade, água ou poeira.

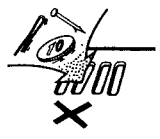


- Unplug the power cord when not using the set for long periods of time.
- Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzkabel vom Netzstecker.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
- Disinnestate il filo di alimentazione quando avete l'intenzione di non usare il filo di alimentazione per un lungo periodo di tempo.
- Desconecte el cordón de energía cuando no utilice el equipo por mucho tiempo.
- Neem altijd het netsnoer uit het stopkontakt wanneer het apparaat gedurende een lange periode niet wordt gebruikt.
- Koppla ur nätkabeln om apparaten inte kommer att användas i lång tid.
- Desligue o fio condutor de força quando o aparelho não tiver que ser usado por um longo período.



* (For sets with ventilation holes)

- Do not obstruct the ventilation holes.
- Die Belüftungsöffnungen dürfen nicht verdeckt werden.
- Ne pas obstruer les trous d'aération.
- Non coprite i fori di ventilazione.
- No obstruya los orificios de ventilación.
- De ventilatieopeningen mogen niet worden beblokkeerd.
- Täpp inte till ventilationsöppningarna.
- Não obstrua os orifícios de ventilação.



- Do not let foreign objects in the set.
- Keine fremden Gegenstände in das Gerät kommen lassen.
- Ne pas laisser des objets étrangers dans l'appareil.
- E' importante che nessun oggetto è inserito all'interno dell'unità.
- No deje objetos extraños dentro del equipo.
- Laat geen vreemde voorwerpen in dit apparaat vallen.
- Se till att främmande föremål inte tränger in i apparaten.
- Não deixe objetos estranhos no aparelho.

- Do not let insecticides, benzene, and thinner come in contact with the set.
- Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen.
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.
- Assicuratevvi che l'unità non venga in contatto con insetticidi, benzolo o solventi.
- No permita el contacto de insecticidas, gasolina y diluyentes con el equipo.
- Laat geen insektenverdelgende middelen, benzine of verfverdunner met dit apparaat in kontakt komen.
- Se till att inte insektsmedel på spraybruk, bensen och thinner kommer i kontakt med apparatens hölje.
- Não permita que inseticidas, benzina e dissolvente entrem em contacto com o aparelho.

- Never disassemble or modify the set in any way.
- Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
- Non smontate mai, né modificate l'unità in nessun modo.
- Nunca desarme o modifique el equipo de ninguna manera.
- Nooit dit apparaat demonteren of op andere wijze modifieren.
- Tä inte isär apparaten och försök inte bygga om den.
- Nunca desmonte ou modifique o aparelho de alguma forma.

MAIN FEATURES

The DN-M2000R is a rack-mount type MD recorder equipped with a variety of easy-to-use functions.

- **Instant Start (Playback starts less than 0.01 seconds after the PLAY button is pressed.)**
- **Hot Start function**
  Up to five tracks can be preset and played immediately.
- **Auto Cue**
  After a track is selected it is automatically cued to the point where audio starts.
  Cueing tracks place at the point where audio starts rather than where the track starts. The level at which sound is first detected can be set between -36 to -60 dB (5 steps).
- **Pitch Control (+8 to –8%, 0.1 step)**
  BPM (Beats Per Minute) control with an analog feeling using a pitch slider.
- **Pitch Bend (The already adjusted BPM can be changed temporarily.)**
- **Seamless Loop**
  Any section can be played repeatedly with no interruption in the sound.
- **Play mode and Finish mode**
  1) Play mode
  ① Continuous: Play a whole disc
  ② Single: Play a track
  2) Finish mode (Stop, Next, Recue)
  * Only when Single Track play is selected.
  ① Stop: Stop after finishing to play a track
  ② Next: Cue at the beginning of next track after finishing to play a track
  ③ Recue: After finishing to play a track, cue at the beginning of the track
- **End Of Message (EOM)**
  At the end of a track, the EOM and TRACK NO. flashes, providing a visual warning to the operator that the track will end shortly. The point at which the flashing begins can be set within a range of 5 to 35 seconds (7 steps) prior to the end of the track.
- **Auto Track Increment**
  DN-M2000R detects the silent portion of the program material and automatically increases the track number. The level of the silent portion can be set within a range of –36 to –60dB (5 steps).
- **Stereo/Mono recording (74/148 min.)**
- **Using CUE Signals to make searches (Up to 5 points per track)**
- **Editing**
  1) Basic Editing
  • DIVIDE: Smallest edited unit is 11.6 msec (1 sound group)
  • ERASE TRACK/ERASE DISC
  • COMBINE
  • MOVE
  • TRACK NAME
  • DISC NAME
  Up to 100 characters can be used for each name, however, the combined total number of characters cannot exceed 1700.
  2) Cue signals also can be edited. (Can be erased, rewritten, or added to later.)
- **19 inch Rack Mountable (Height: 3U)**
- **Large FL Display**
- **Track Search Select knob (Easy track selection)**
- **Search/Scan dial**
  Perform searches to 1 sound group precision using the dial and easy scans using the scan dial.
- **Program Play (Max. 25 tracks)**
  1) When the PLAY mode is set to Single, the player stands by at the beginning of next track. (at Finish mode "NEXT")
  2) When the PLAY mode is set to Continuous, the playback is continued according to your programmed sequence.
- **SCMS**
  Recording is possible without reception of the copy defeat restriction. Writing of the copy defeat code is selectable.

CONTENTS

Checking the Contents

Check that the carton contains the following items:

Operating instructions (this booklet) 1
Pin-plug cord 2
Foot sheet 4

Installing the Units

Mount the units onto your console or rack with 19" EIA rack rails.

CAUTION:

- The DN-M2000R is a rack-mount type recorder, but it can also be used on top of a table. When doing so, attach the included foot sheets to the four corners of the bottom.

Caution on handling

Do not move or transport the recorder with a disc loaded. Doing so may scratch the disc or damage the recorder.

CAUTION:

- If the power is turned off during the recording pause, recording, UTOC write or editing mode, the cartridge cannot be ejected when the power is off.
- If the cartridge cannot be ejected when the power is off, turn on the power to eject it.

• DECLARATION OF CONFORMITY

We declare under our sole responsibility that this product, to which this declaration relates, is in conformity with the following standards:
EN60065, EN55013, EN55020, EN60555-2 and EN60555-3.
Following the provisions of 73/23/EEC, 89/336/EEC and 93/68/EEC Directive

[1] PART NAMES AND FUNCTIONS

(1) Front Panel

❶ LEVEL control
- Use this to adjust the volume of the headphones.

❷ PHONES jack
- Connect headphones with an impedance of 30 to 40 Ω/ohms.

❸ Cartridge insertion slot
- First open the lid.
- Insert the cartridge as indicated by the arrow on the top.
- Press the cartridge to the back of the slot until it is set. Once the cartridge is set, close the lid.

NOTE:
To prevent dirt and dust from entering the cartridge insertion slot, always keep the lid closed except when loading and unloading cartridges.

❹ EJECT button
- Press this button to eject the cartridge.
- The cartridge cannot be ejected during recording, editing or while the UTOC is being written.

❺ PLAY MODE button
- When this button is pressed, the play mode switches.

❻ TIME button
- Press this button to switch the time display between the remaining time (REMAIN) and the elapsed time (ELAPSED).

❼ NAME/CAPS button
- When this button is pressed, the character display switches between the disc name and track name, in that order.
- When the button is pressed while editing names, the selected characters switch between capital letters, small letters, numbers and symbols, in that order.

❽ LOOP button
- Press this to start the loop mode (A-B loop or hot start repeat play).
- The LED lights during loop playback.

❾ A button
- Press this to set the starting point for loop playback.

❿ B button
- Press this to set the ending point for loop playback.

⓫ EXIT/RELOOP button
- When this button is pressed during loop playback, loop playback stops and the normal play mode is set (EXIT). When pressed again, loop playback resumes.

⓬ STOP button
- When this button is pressed during hot start playback, playback stops.
- When press during hot start loading, hot start is canceled. (The data loaded before the button is pressed is valid.)

⓭ REC LEVEL control
- Use this to adjust the level of the analog input signal.

⓮ PITCH button
- When this button is pressed, the playing speed can be changed using the pitch slider.
- The LED lights when the pitch play mode is set.
- Press the button again to cancel the pitch play mode and return to the normal speed.

Caution on ejecting cartridge
- Do not try to pull out a partially inserted cartridge. Doing so may damage it.

⓯ PITCH BEND - and + button
- The BPM increases or decreases while one of these button is pressed.
- The BPM returns to the previous value when the button is released.

⓰ POWER button
- This turns the set on and off.

⓱ SCAN dial (outer side)
- Turn this dial to set the manual search (fast forward or fast reverse) mode.
- Turn the dial clockwise to move the playback position forward, counterclockwise to move the playback position backward.
- The speed changes according to the angle at which the dial is turned.

⓲ SEARCH dial (inner side)
- Turn this dial to set the manual search mode.
- Turn the dial clockwise to move the playback position forward, counterclockwise to move the playback position backward.
- One click corresponds to one frame of movement. The playback position can be moved anywhere between the beginning of the first track and the end of the last track.

⓳ CUE SEARCH button
- When this button is pressed during the cue, pause, search or play mode, the cue signal point direct search mode is set. When pressed again, the direct search mode is canceled.
- The LED lights when the direct search mode is set.

⓴ CUE button
- When this button is pressed during the play or pause mode, the pickup returns to the position at which playback started and the cue mode is set. **(Back Cue)**
- The LED lights when the cue mode is set.
- When the button is pressed during the recording or recording pause mode, recording stops, the pickup returns to the recording start position and the cue mode is set.
- When this button is pressed in the cue direct search mode, the cue point is searched for.
- When the button is pressed while pressing the PLAY MODE button, the preset mode is set.

㉑ CUE WRITE button
- Press this button during the cue, pause, play, or manual search. When the edit mode and recording mode to record a cue signal.

㉒ PLAY/PAUSE button
- Press this button in the cue, pause or manual search mode to begin playback.
- Press the button in the stop mode to search for the first track and begin playback.
- When the button is pressed in the recording pause mode, recording starts.
- The LED lights when the play or recording mode is set.
- When the button is pressed during playback, the pause mode is set. The LED flashes while the pause mode is set.
- When the button is pressed during recording, the recording pause mode is set. The LED flashes when the recording pause mode is set.

㉓ REC button
- When this button is pressed during the stop, cue or pause mode, the recording pause mode is set.
- When the button is pressed during recording, the track number is incremented.
- The LED lights when the recording or recording pause mode is set.

㉔ EDIT/INPUT button
- Press this button to set the edit mode.
- The "EDIT" lights when the edit mode is set.
- When the button is pressed during the edit mode, the edit mode is canceled.
- Press this button in the recording pause mode to switch between analog and digital, according to the input signal.

㉕ Select knob
- When this knob is turned during playback, the selected track is searched for.
- Turn the knob clockwise by one click to move one track forward, counterclockwise by one click to move one track backward.
- When the knob turned while pressing it in, one click corresponds to 10 tracks.
- In the preset mode, use this knob to set and enter preset setting.
- When setting programs, use this knob to select, enter and check the program.
- In the cue point direct search mode, use this knob to select the cue point.

㉖ PROG. PLAY ON/OFF button
- When this button is pressed while the PROGRAM IN LED is lit, the program play mode is set.
- The button will not function during the LOOP mode.
- The LED lights during the program play cue and play modes.
- When the button is pressed during the program play cue or play mode, the program play mode is cleared.

㉗ PROGRAM IN button
- Press this button to set the program input mode.
- The button will not function during the play mode.
- The LED flashes when in the program input mode.
- The LED lights when a program is set.

㉘ 1 ~ 5 (number) buttons (Hot start buttons)
- Press the desired button to start hot start playback.

㉙ ERASE button
- Press this button in the edit mode to set the erase mode (to erase discs, tracks or cue points).
- When this button is pressed again after selecting the item to be erased, "*** OK?" appears on the display. Press the button again to erase the selected item.

㉚ DIVIDE button
- Press this button in the edit mode to set the divide mode (to divide a track in two).
- When the button is pressed again after checking the divide point, the track is divided and the divide mode is canceled.

㉛ COMBINE button
- Press this button in the edit mode to set the combine mode (to combine tracks).
- When the button is pressed again after checking the tracks, the tracks are combined.

㉜ MOVE button
- Press this button in the edit mode to set the move mode (to move tracks).
- When this button is pressed again in the move mode after selecting the number to which the track is to be moved, the track is moved.

㉝ TITLE IN button
- Press this button during the editing mode to set the name input mode.
- The LED light when the name input mode is set.
- When this button is pressed after inputting the name, the input name is entered.

㉞ LOAD button
- When this button is pressed in the cue and pause mode, the data for five tracks starting from the track at which the cue and pause mode is set is loaded into the hot start memory.
- When a hot start button is pressed while pressing this button after the data is loaded, the data for the pressed number is replaced with new data.
- When the STOP button is pressed while pressing this button after the data is loaded, the data for five tracks is replaced with new data.

㉟ Pitch slider
- Use this to adjust the BPM.
- The BPM decreases when the slider is moved upwards and increases when the slider is moved downwards.

(2) Top Panel

❶ ANALOG OUT jacks
- These are analog outputs using RCA type jacks.

❷ ANALOG IN jacks
- These are analog inputs using RCA type jacks.

❸ DIGITAL IN jack
- This is a digital input using an RCA type jack.
- Signal format: SPDIF or IEC958 Type II

(3) Display

❶ DISC NAME/TRACK NAME indicators
- "DISC NAME" lights when the disc name is displayed on the character display, "TRACK NAME" lights when the track name is displayed.

❷ PROGRAM indicator
- This lights when the Program play mode is set.

❸ TRACK No. display
- This displays the number of the track at the current position. This also lights during the track search mode and when switching to the cue mode.

❹ Character display
- This displays disc names, track names.
- Various instructions are displayed here during presetting, programming, editing, etc.

❺ Playing time display
- This indicates the time of the current position, in minutes (m), seconds (s) and frames (f).

❻ PLAY MODE indicators
- "SINGLE" lights when in the single track play mode.

❼ TIME MODE Indicators
- "ELAPSED" lights when the elapsed time is displayed.
- "REMAIN" lights when the remaining time is displayed.

❽ NEXT No. display
- This displays the number of the next track to be played.

❾ TOC indicator
- This lights when it is necessary to rewrite the TOC (UTOC) due to editing, etc
- This flashes while the TOC (UTOC) is being written.

❿ EDIT indicator
- This lights when the edit mode is set.

⓫ DIGITAL IN indicator
- This lights (or flashes) when the digital input signal is selected.
- The indicator flashes when the digital signal is unlocked and remains lit when the digital signal is locked.

⓬ Level display
- This displays the playback level during playback, the input level during recording.

⓭ PITCH display
- This indicates the set play speed in %.

⓮ EOM indicator
- This lights when the EOM is preset, and starts flashing when the EOM set time is reached.

⓯ CUE indicator
- This lights for approximately 3 seconds when the position at which a cue signal is set is played.
- The indicator flashes when the cue mode is set at a position at which a cue signal is set.

⓰ EJECT LOCK indicator
- When this indicator is lit, the eject lock function is set and the cartridge is not ejected even when the eject button is pressed.

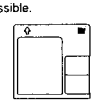
⓱ REPEAT indicator
- When this indicator is lit, hot start playback is repeated.

2 ABOUT MINIDISCS

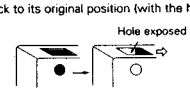
■ MiniDiscs allow a maximum of 74 minutes (stereo) of recording and playback in a compact size.
There are two types of MiniDiscs: those for playback only, and those for recording and playback.

Playback only MiniDiscs
- These discs are for playback only. Commercially available music MDs are of this type.
- These are laser discs, like regular compact discs.
- Tracks on such discs cannot be edited.

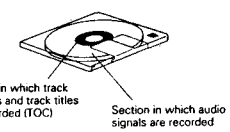
Recordable MiniDiscs
- These are magneto-optical discs on which both recording and playback are possible. Recording is performed through magnetic modulation.
- Re-recording is also possible.



Accidental erasure prevention tabs
These tabs protect recordable MiniDiscs from accidental erasure.
To avoid accidentally erasing the recording, open the tab so that the hole is exposed. (See the diagram below.) When this is done, "Protected" is displayed if you attempt to record, erase or otherwise edit the disc, and the recording is protected. To record or erase the disc, set the tab back to its original position (with the hole covered).



Recording on discs
MiniDiscs include a section in which the audio signals are recorded and a section in which such data as track numbers and track titles are recorded.

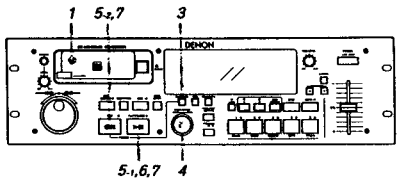


■ **The TOC**
With MiniDiscs, after the audio signals are recorded, data used for checking the tracks (TOC–Table of Contents) is also recorded on the disc. This TOC data is used when playing the disc. In addition, editing is performed by rewriting the TOC data.
When TOC writing starts, the "TOC" indicator flashes. Do not shake the main unit, press the main unit's power button or unplug the power cord while the TOC is being written. If the data is not recorded properly, it will not be possible to play the disc.

■ **Handling MiniDiscs**
MiniDiscs are housed in cartridges, so there is no need to worry about dirt and scratches. However, dirty or warped cartridges may cause malfunction. Be careful of the following to ensure long-lasting, high quality sound:
- Do not touch the disc surface directly.
- Do not open the shutter by hand.
- Do not place MiniDiscs in dusty, dirty or humid places.
- Do not place MiniDiscs in places exposed to direct sunlight or high temperatures.

Cleaning
Use a dry cloth to gently wipe dirt or dust off the cartridge. Do not apply excessive force.

3 BASIC OPERATIONS



(1) Before Starting Playback

1	**Load the cartridge.**
2	**Make the presettings according to the usage purpose.** **(See Page 31).** **NOTE:** Steps 1 and 2 can be performed in the opposite order.
3	**Select the play mode.** Press the PLAY MODE button. Single track play mode SINGLE Lit Continuous play mode SINGLE
4	**Select the track to be played.** Turn the select knob (I◄◄ – ►►I). 01 ⇨ 03 Flashing during search Lit when in cue CUE ⇨ CUE The selected track is cued and the cue mode is set.
5-1	**To check the play start position.** Press the PLAY/PAUSE button. Lit Off ►II CUE Monitor the playback signals to check the play start position.
5-2	Press CUE button. Flashing Lit CUE ⇨ CUE The pickup returns to the play start position and the cue mode is set. **(Back Cue)**

(2) Starting Playback

6	**Start playback.** Press the PLAY/PAUSE button. Lit Off ►II CUE Playback begins and the playback signals are output. 03 03.28.47. 04 POPS SELECION

(3) Stopping Playback

7	**Playback can be stopped in the following ways.** Flashing Lit CUE ⇨ CUE Playback is interrupted, the pickup returns to the play start position and the cue mode is set. Flashing ►II Playback is interrupted and the pause mode is set at that point.

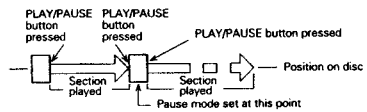
Sleep mode.
The sleep mode is set if no operation is performed for 30 minutes in the cue, pause mode.
When in the sleep mode, press the PLAY/PAUSE button to search for the position before the sleep mode was set and start playback. Press the CUE button to search for the position before the sleep mode was set and cue at that point.

(4) PLAY/PAUSE and CUE Operations

- The operation switches between playback and pause each time the PLAY/PAUSE button is pressed.
- When the CUE button is pressed during playback, the pickup returns to the position at which playback was started.

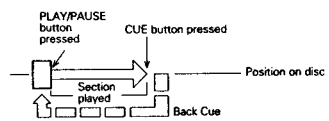
The diagrams below show playback patterns when the PLAY/PAUSE and CUE buttons are pressed.

PLAY and PAUSE



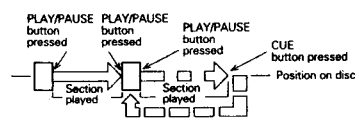
When the PLAY/PAUSE button is pressed, playback starts and proceeds as shown by the arrow on the diagram above.
If the PLAY/PAUSE button is pressed again during playback, the pause mode is set at that point. Press the PLAY/PAUSE button again to resume playback.

PLAY and CUE



When the CUE button is pressed after starting playback by pressing the PLAY/PAUSE button, the pickup returns to the position at which playback was started and prepares for the next playback.
Press the PLAY/PAUSE and CUE buttons alternately to start playback repeatedly from the same position.
This function is called "Back Cue".

PLAY, PAUSE and CUE



If the pause mode is set and playback is then resumed, the position to which the pickup returns with the Back Cue function changes.

(5) Before Starting to Record

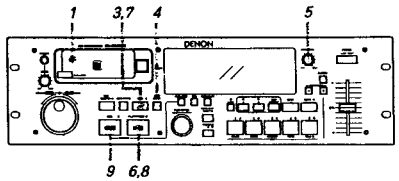
- Turn on the power. To record from the analog input, it is recommended to turn on the power at least 5 seconds before starting to record. This eliminates fluctuations of the A/D converter DC offset, reduces the amount of DC offset at the recording start position, in the middle of the recording and at the recording end position, and keeps the DC offset constant. DC offset hinders the auto cue function for detecting the point where the sound starts at low levels and the auto track increment function which detects soundless sections.
- Load a recordable disc. There are 60-minute and 74-minute recordable discs. For a description of recordable discs, see the section "Method of Recording on Discs" below. It is not possible to record on discs which are already recorded and have little free space left or on playback only discs.

(6) Method of Recording on Discs

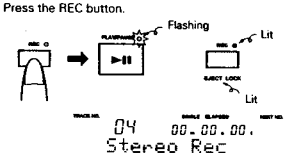
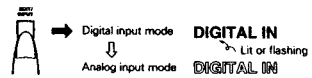
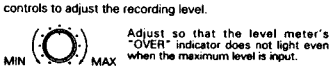
	Disc for recording	Method of recording on disc
1	Discs on which nothing is recorded	Recording starts from the beginning of the disc. The beginning of the disc is found automatically, so there is no need to do this manually.
2	Recording on discs after erasing all their tracks	Same as above.
3	Recording on an already recorded disc	Recording starts from the end of the last recorded section. The end of the last recorded section is found automatically, so there is no need to do this manually. The set is designed so that it is not possible to record over a recorded section, so you cannot accidentally erase a previous recording.
4	Recording on discs after erasing part or all of the disc	If there is not enough remaining space or if you want to do the recording over, erase before recording. To erase one track at a time: Use the track erase function. To erase all the tracks at once: Use the all erase function.

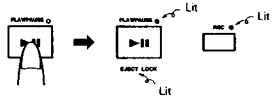
- Disc types
  Blank discs: Discs on which nothing is recorded
  Discs you have just bought
  Discs that have been erased (using the all erase function)

  No-track discs: Discs on which nothing is recorded but which contain a disc name
  Blank discs which have been given a disc name
  Discs with disc names on which all the tracks have been erased individually

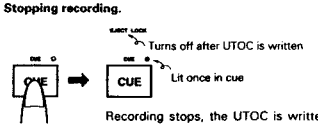


(7) Starting to Record

1	**Load the cartridge.**
2	**Set the presettings according to the purpose.** **(Refer to Page 31).** **NOTE:** Steps 1 and 2 can also be performed in the reverse order.
3	**Set the recording pause mode.** Press the REC button.  For a disc on which 3 tracks are already recorded The disc's total number of tracks and playing time are displayed.
4	**Set the input signal.** Press the EDIT/INPUT button and switch between analog and digital, according to the input signal.  **NOTE:** If the DIGITAL IN indicator is flashing, the digital signal is unlocked. If this is the case, recording is not possible.
5	**Adjust the recording level.** When recording analog inputs, use the INPUT LEVEL controls to adjust the recording level.  Adjust so that the level meter's "OVER" indicator does not light even when the maximum level is input.

6	**Start recording.** Press the PLAY/PAUSE button.  Recording starts and the TOC indicator lights.
7	**To change the track number during recording.** Press the REC button.  The track number is incremented and recording continues.
8	**To pause recording:** Press the PLAY/PAUSE button.  Recording stops and the recording pause mode is set. To resume recording, press the PLAY/PAUSE button again. The track number is incremented and recording resumes.

(8) Stopping Recording

9	**Stopping recording.**  Recording stops, the UTOC is written and the standby mode is set. The TOC indicator flashes while the UTOC is being written.

(9) Incrementing Track Numbers

During recording, track numbers can be incremented either manually or automatically.

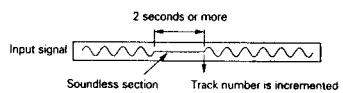
- Track numbers can be incremented manually in the following four ways:
  1) Press the REC button (●) during recording. This increments the track number.
  2) Press the PLAY/PAUSE button (►II) during recording to stop recording for that track number and set the recording pause mode. When the PLAY/PAUSE button (►II) is pressed again, recording starts with a new track number.
  3) After recording, use the divide function.

- Track numbers can be incremented automatically in the following three ways, according to the type of input signal:

Input type		Method
Analog/digital input		Detection of soundless section 1)
Digital input	CDs and MDs	Detection of soundless section 1)
		Using the CD's or MD's subcodes 2)
	DATs	Detection of soundless section 1)
		Using the DAT's start IDs 3)

1) Detection of soundless section
   ① Make the following two presettings:
   - Set "Auto Inc OFF" (3) to "Auto Inc Det."
   - Set the soundless detection level setting to "Inc. Det.-(48) dB" (4).

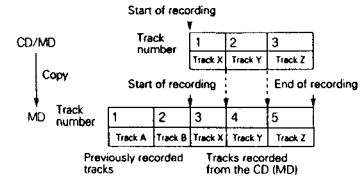
   ② Start playback and recording in such a way that the beginning of the sound is not missed. When a soundless section (or a section with level lower than the preset soundless detection level setting) of at least 2 continuous seconds is detected, the disc's track number is automatically incremented.



NOTE: The auto track increment function may not work when recording analog signals containing much noise. In this case lower the detection level to for example –54 dB.

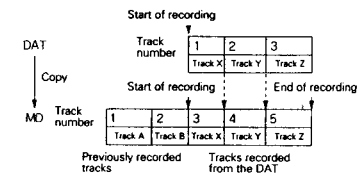
2) Using the CD's or MD's subcodes (digital input)
   ① Make the following presetting:
   - Set "Auto Inc OFF" (3) to "Auto Inc Dig.".

   ② Start playback on the CD (MD) player and recording on the recorder in such a way that the beginning of the sound is not missed. The disc's track number is automatically incremented when the CD's (MD's) track number changes. Changes in the CD's (MD's) track number will not be detected for approximately 4 seconds after the track number is incremented.



3) Using the DAT's start IDs (digital input)
   ① Record the start ID on the recorded DAT.
   ② Make the following presetting:
   - Set "Auto Inc OFF" (3) to "Auto Inc Dig."

   ③ Start playback on the DAT player and recording on the recorder in such a way that the beginning of the sound is not missed. The disc's track number is automatically incremented when the DAT's start ID is detected. The start ID will not be detected for 15 seconds after the track number is incremented.



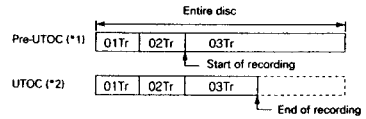
(10) Pre-UTOC Function

- Presetting must be set.

This function protects the recording should the power supply be cut off. The UTOC is written directly after recording starts.

(The pre-UTOC is written.)

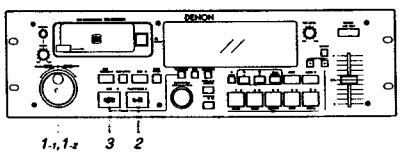
Normally the UTOC is written after recording is completed, so if the power supply should be cut off during the recording or directly after the recording is finished, the recording will not be registered on the disc. To prevent this, the pre-UTOC (*1) is registered on the disc directly after recording starts. Once recording is completed normally, the actual UTOC (*2) is written. If the power should be cut before the actual UTOC is written, the disc can be played according to the pre-UTOC. This way you never accidentally lose recordings that cannot be made over again.



If some problem occurs and recording is interrupted, the same recording and UTOC can be written using the following editing operation:
Use the divide function at the point where recording was interrupted in track 03 on the above diagram to divide the track, then use the erase function to erase track 04.

NOTE:
The auto track increment function using the DAT's start ID or the CD's sub codes will not work if the digital input is in professional format (AES/EBU). Input digital signals of the consumer format (SPDIF).

4 HANDY OPERATIONS



(1) Starting Playback from the Middle of a Track (Manual Search)

- When a track is selected and PLAY/PAUSE button is pressed, playback starts from the beginning of that track. To start from a different position in the track, use the procedure described below to find the desired position.

1-1 **Find the play start position.**
Turn the SEARCH dial.

When the SEARCH dial (inner side) is turned, the frame move mode is set. The playback position moves one frame for each click.

Backward Forward

When the dial is turned clockwise, the playback position moves as follows:

03. 46. 52, ⇨ 53, ⇨ 54,

Listen to the sound and find the desired play start position.

1-2 Turn the SCAN dial to change the playback position quickly.

The fast forward/reverse mode is set when the SCAN dial (outer side) is turned.
The speed changes according to the angle at which the dial is turned.

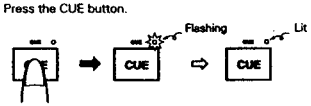
Backward Forward

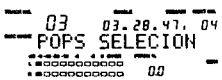
2 **To check the play start position.**
Press the PLAY/PAUSE button.

Playback starts.

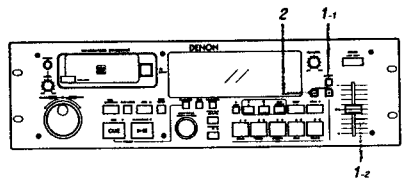
Monitor the play signal to check the play start position.

3 **Cue the play start position.**
Press the CUE button.





The pickup returns to the play start position and the cue mode is set.



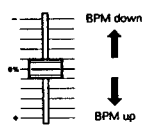
(2) Playing at a Different Speed (Pitch)

There are two ways to change the playing speed.
- Adjust the BPM using the pitch slider (±8%).
- Press a PITCH BEND button to temporarily change the BPM. Use this after adjusting the BPM with the pitch slider.

1-1 **Pitch slider.**

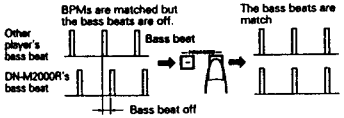
Set the variable speed mode.
Press the PITCH button.

1-2 The BPM decreases when the pitch slider is moved upwards, increases when the pitch slider is moved downwards.

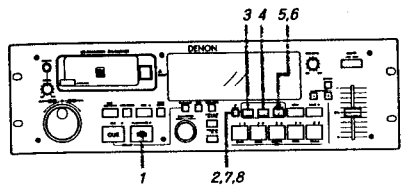


2 **Pitch bending.**

Press the PITCH BEND + (or PITCH BEND –) button.
- The BPM increases or decreases temporarily while the PITCH BEND + or PITCH BEND – button is pressed.
- The extent to whitch the PITCH BEND button changes the BPM is proportionate to the amount of time the button is pressed. The longer the button is held down, the greater the percentage of change.
- The BPM changes within a range of ±9.9%.
- The diagram below shows how the pitch bend function is used. In this example, the DN-M2000R and another player are playing and the BPM is already matched using the pitch slider.



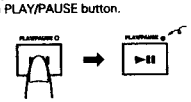
NOTE:
When the play speed (PITCH) is set, the display shows the set pitch, but the disc is played at the standard speed until the PITCH button is pressed (and the LED is lit).
When PITCH is lit, the sound skips if the pitch slider is operated continuously.



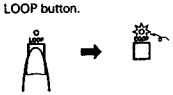
(3) Seamless loop

1 **Starting seamless loop playback.**

Start playback.
Press the PLAY/PAUSE button.

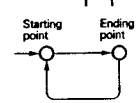


2 **Set the seamless loop mode.**
Press the LOOP button.

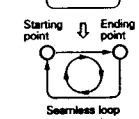


3 **Set the starting point (A).**
Press the A button.

4 **Set the ending point (B).**
Press the B button.



When the ending point (B) is set, playback starts from the starting point (A) with no interuption in the sound.



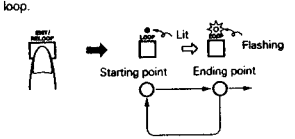
After this, the section between the starting point (A) and the ending point (B) is played repeatedly with no interuption in the sound.

Alternative way to set the seamless loop starting point (A) and ending point (B).
- After setting point A, set the cue mode, press button A, then use the scan or search function to fine-adjust point A. (The same can be done for point B.)

Note: It is not possible to use the seamless loop mode at the same time as the hot start play or programmed play mode.

Leaving the seamless loop mode tenporarily.

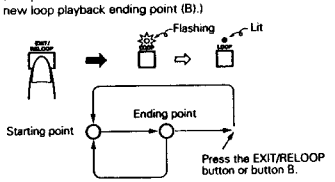
5 Press the EXIT/ RELOOP button while playing a seamless loop.



- When the ending point (B) is reached, playback continues without returning to the starting point (A).

Replaying a seamless loop.

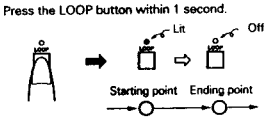
6 Press the EXIT/ RELOOP button or button B during normal playback.
(The position at whitch button B is pressed is set as the new loop playback ending point (B).)



- Playback returns to the starting point (A) and seamless loop playback begins.

Switching from seamless loop playback to normal disc playback (Setting the normal playback mode without canceling the starting and ending points).

7 Press the LOOP button within 1 second.

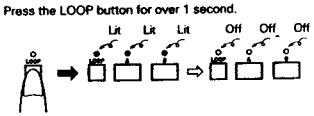


- The normal playback mode is set.
(Only the loop mode is canceled. Point A and B are not cleared)

NOTE:
The starting point (A) and ending point (B) settings are canceled when the cartridge is removed from the recorder.

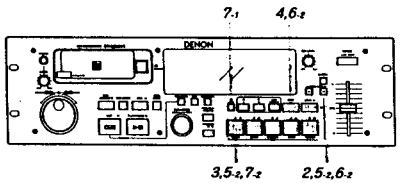
Canceling the seamless loop setting.

8 Press the LOOP button for over 1 second.



- When this done, the starting point (A) and ending point (B) settings are automatically canceled.

NOTE:
After canceling the seamless loop during loop playback, it may take about 10 seconds before the seamless loop mode is set again.



(4) Instantaneous play (Hot Start)

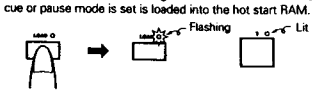
- A maximum of 5 tracks can be preset and played instantaneously. This function is called instantaneous play (Hot Start).

NOTES:
- The hot start data is cleared if the editing or recording operations are performed during the hot start mode.
- Seamless playback and programmed playback are not possible during the hot start mode. Press ⊟ while pressing LOAD to cancel the hot start play mode, then perform seamless playback or programmed playback.

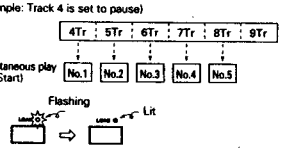
1 **Data loading.**

Set the cartridge and cue or pause at the track for hot start playback.

2 Press the LOAD button.
- The data for five tracks starting from the track at which the cue or pause mode is set is loaded into the hot start RAM.



(Example: Track 4 is set to pause)

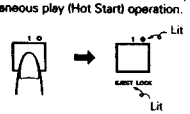


- When the data loading is completed, the LOAD LED will light and the unit will be set to instantaneous play (Hot Start) standby.

NOTE:
When the stop operation is set during data loading and the data loading of the lit number LEDs (from 1 to 5) is completed, data loading of subsequent tracks is stopped.

3 **Starting the play operation.**

During instantaneous play (Hot Start) standby, press the number button (from 1 to 5) that is to be played to start the instantaneous play (Hot Start) operation.

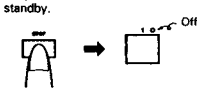


- The number LED flashes when an EOM is detected during playback (when the EOM is turned on with the presetting).
- When play finishes, the unit returns to instataneous play (Hot Start) standby.

NOTES:
- The instantaneous play (Hot Start) mode will end with one track.
- A press of a number button during the instantaneous play (Hot Start) mode will cause the unit to switch to the track of the pressed number and start playing.
- Cue detection is also performed at the time of instantaneous play (Hot Start) loading.
  Tracks with a setting level less than 10 seconds from the beginning of the track are loaded from the beginning of the track. Even when the level of cue detection is changed after loading, the pause position will not change until the initial data is cleared.

4 **Stopping the play operation.**

A press the STOP button during the play operation causes the play to stop and returns the unit to instantaneuos play (Hot Start) standby.



5-1 **Data substitution (The replacement data is loaded from the position at which the cue or pause mode is set.)**

Set the track for which data is to be newly entered to pause.

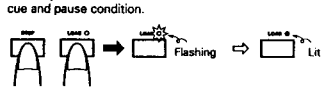
5-2 While depressing the LOAD button, press the number button (from 1 to 5) for which data is to be entered. During data loading the LOAD LED will flashes and the number LED will be lit.

- When data loading is completed, the LOAD LED lights steadily and the number button gose off.

6-1 **Substituting a 5-track portion of data in one lot.**

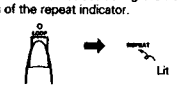
Set the first track of the newly substituted tracks to cue and pause.

6-2 Press the STOP button while the LOAD button is depressed to load to instantaneous play (Hot Start) RAM a 5-track portion of data from the tracks whitch are in the cue and pause condition.

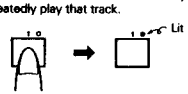


7-1 **Repeat play.**

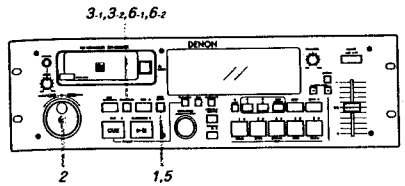
When the LOOP button is pressed, the repeat mode is set. The repeat mode is only set in the hot start play mode. The repeat mode is not set during the normal play mode, regardless of the repeat indicator.



7-2 Press the number button of the track to be played (from 1 to 5) to repeatedly play that track.



- Press the LOOP button while a track is being played to repeatedly play that track.
- Press the LOOP another time to cancel the repeat play mode.



(5) Setting Cue Points

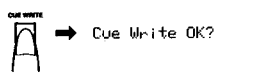
With this function, cue points can be set at any positions in tracks then searched for during playback. Up to five cue points can be set per track.

1 **In the cue, pause, manual search or play mode.**

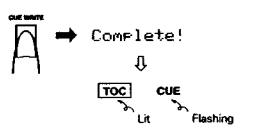
Set the EDIT mode.
Press the EDIT/INPUT button.

2 **Find the position at which you want to set the cue point.**
Use the SEARCH or SCAN dials to find the position at which you want to set the cue point.

3-1 **Set the cue point.**
Press the CUE WRITE button.

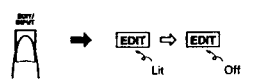


3-2 Press the CUE WRITE button again while **Cue Write OK?** is displayed.



4 **To continue setting other cue points.**
Repeat steps 2, 3-1 and 3-2.

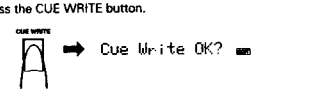
5 **Cancel the edit mode.**
Press the EDIT/INPUT button.



UTOC writing begins when the edit mode is canceled.

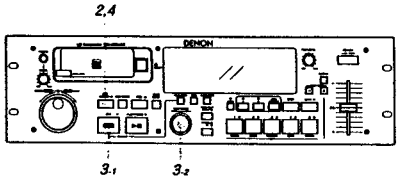
6-1 **To set cue points during recording.**

Press the CUE WRITE button.



6-2 Press the CUE WRITE button again while **Cue Write OK?** is displayed.

NOTE: The UTOC is written once recording is completed.



(6) Direct Search for Cue Points

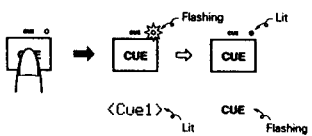
When cue points are stored on a track, they can be used for direct search.

1 **Load the cartridge.**

2 **Set the cue direct search mode.**
Press the CUE SEARCH button.

NOTE: The cue direct search mode cannot be set if no cue points are stored on the track.

3-1 **Search for the cue point.**
Press the CUE button.



The Cue1 point is searched for and the cue mode is set at that position.
Press the CUE button again to search as follows:

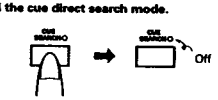
<Cue2>⇨<Cue3>▭▭⇨<Cue5>⇨<Cue1>

3-2 Cue points can also be searched for by turning the select knob (I◀◀ – ▶▶I).

When turned clockwise:
<Cue1>⇨<Cue2>▭▭⇨<Cue5>⇨<Cue1>

When turned counterclockwise:
<Cue5>⇨<Cue4>▭▭⇨<Cue1>⇨<Cue5>

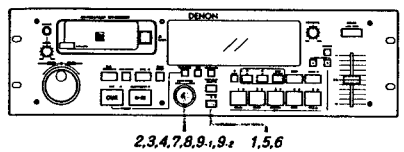
4 **Cancel the cue direct search mode.**



The set returns to the normal operating mode.

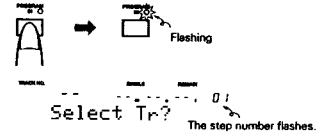
5 PROGRAMMED PLAYBACK

- The tracks can be programmed to play in a certain order.
- Up to 25 tracks can be programmed.
- Programmed playback is performed according to the play mode (single or continuous) and preset finish mode (stop, next or recue) settings.

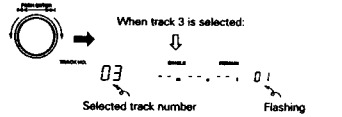


(1) Inputting Programs

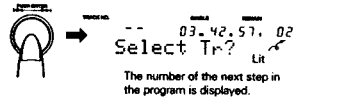
1 **Set the program input mode.**
Press the PROGRAM IN button.



2 **Select the track to be programmed.**
Turn the select knob (I◀◀ – ▶▶I).

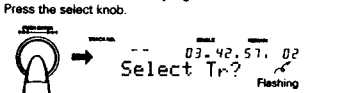


3 **Enter the selected track in the program.**
Press the select knob.



The number of the next step in the program is displayed.

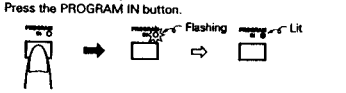
4 **Enter the next track in the program.**
Press the select knob.



The time display shows the total playing time for the program.

Repeat steps 2, 3 and 4 to program the tracks in the desired order.

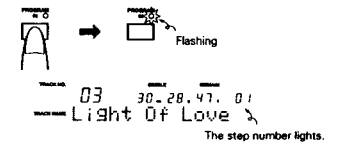
5 **Exit the program input mode.**
Press the PROGRAM IN button.



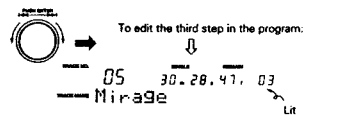
The set returns to the normal mode.

(2) Changing Programs

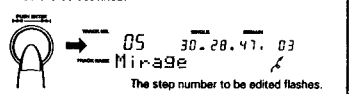
6 **Set the program edit mode.**
Press the PROGRAM IN button.



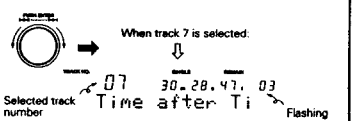
7 **Select the step number to be edited.**
Turn the select knob (I◀◀ – ▶▶I).



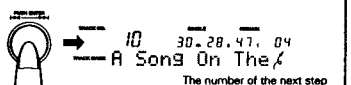
8 **Set the program change mode.**
Press the select knob.



9-1 **To change the track.**
Select the track to be changed.
Turn the select knob (I◀◀ – ▶▶I).

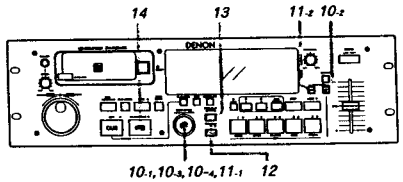


9-2 **Enter the selected track.**
Press the select knob.



To continue editing the program, repeat steps **7**, **8**, **9-1** and **9-2**.

To exit the program editing mode, press the **PROGRAM IN** button. The set returns to the normal mode.



Inserting a track in the program.

10-1 **Select the position at which to insert a track.**
Turn the select knob (I◄◄ – ►►I).

To insert a track at the third step in the program:

05 30.28.47, 03
Mirage
Lit

10-2 **Set the program insert mode.**
Press the "+" button.

05 30.28.47, 03
Select Tr?
The step number flashes.

10-3 **Select the track to be inserted.**
Turn the select knob (I◄◄ – ►►I).

When track 8 is selected:

08 30.28.47, 03
Touch The New

Number of selected track — Flashing

10-4 **Enter the selected track.**
Press the select button.

05 34.26.17, 04
Mirage
The number of the next step in the program lights.

To insert more tracks in the program, repeat steps **10-1**, **10-2**, **10-3** and **10-4**.
(To exit the program insert mode, press the **PROGRAM IN** button.)

Deleting tracks from the program.

11-1 **Select the step to be deleted.**
Turn the select knob (I◄◄ – ►►I).

To delete the track at the third step

05 30.28.47, 03
Mirage
Lit

11-2 **Delete that track from the program.**
Press the "–" button.

Number of track at the next step in the program

08 27.36.15, 03
Touch The New
The next step number lights.

To continue deleting tracks from the program, repeat steps **11-1** and **11-2**.

12 **Exit the program editing mode.**
Press the PROGRAM IN button.

Flashing → Lit

(3) Playing Programs

13 **Set the program play mode.**
Press PROG. PLAY ON/OFF button.

Lit
Flashing → Lit
CUE ⇨ CUE

03 30.28.47, 02
Light Of Love
Lit — Number of next step

The first track in the program is cued and the cue mode is set.

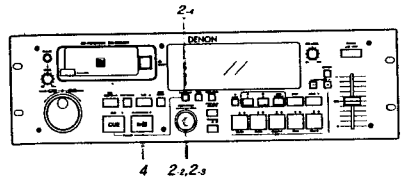
14 **Start programmed playback.**
Press the PLAY/PAUSE button.

Lit — Off
CUE

Programmed playback starts.

- When the cartridge is ejected, the set program is cleared.

NOTE:
Programs cannot be input when no disc is loaded.



(4) Presetting Programs

- Programs can be stored in the preset memory. When a cartridge for which a program is preset is loaded, the programmed playback mode is set automatically.
- 3 cartridge can be programmed.

1 **Input the program.**
Following the instructions under "(1) Inputting the Program" to input the program. (See Page 21)

2-1 **Set the preset mode.**
Follow the instructions under "(2) Presetting Procedure" to set the preset mode. (See Page 31)

2-2 **Select the preset item.**
Turn the select knob to select "Program 1", "Program 2", "Program 3".

Character display

Program1
Program2
Program3

2-3 **Change the preset setting.**
Press the select knob.

The character display changes as follows:

Before change — After change
Program1 OFF ⇨ Program1 ON

2-4 **Cancel the preset mode.**
Press the PLAY MODE button.

The preset setting mode is canceled and the set returns to the normal mode.

To play a preset disc.

3 **Load a disc for which a program is preset.**

CUE Lit — Lit — Lit

03 30.28.47, 02
Light Of Love

The pickup searches for the first programmed track and the cue mode is set.

4 **Start programmed playback.**
Press the PLAY/PAUSE button.

Lit — Off
CUE

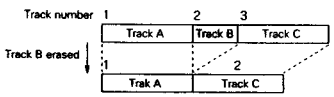
Programed playback starts.

6 EDITING FUNCTIONS

(1) Editing Functions

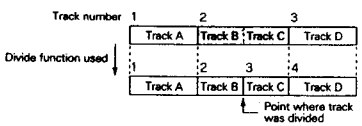
There are six basic editing functions possible on MDs, as described below. Here we describe these functions briefly.

- **Track erase function (for erasing specific tracks)**
  An entire track, from beginning to end, can be erased instantaneously simply by operating buttons. Unlike tapes, there is no need to record over, erase, or cut the tape.

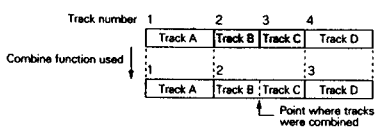


- **All erase function (for erasing all the tracks on the disc)**
  All the tracks on the disc can be erased instantaneously simply by operating buttons. Unlike tapes, there is no need to use an eraser or record over.

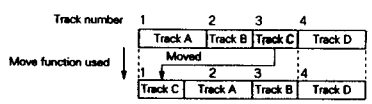
- **Divide function (for dividing a track in two)**
  One track can be divided into two tracks. This makes it possible to easily set search points simply by operating buttons after recording.



- **Combine function (for combining two tracks)**
  Short recordings or cuts created by dividing tracks can be combined into a single track. Unlike tapes, there is no need to copy over or cut the tape.



- **Move function (for moving tracks)**
  The order of the tracks can be changed. Unlike tapes, there is no need to copy over or cut the tape.

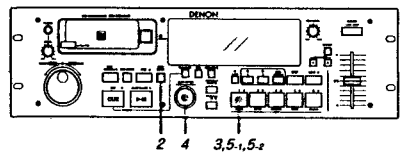


- **Title function**
  Disc names or track names can be stored on recorded discs. The disc names and track names can be called out on the display using the display function.

There are six basic editing functions possible on MDs, as described below. Here we describe these functions briefly.

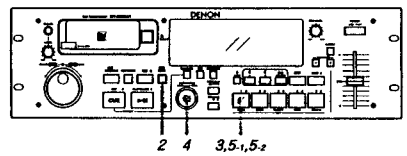
- **Cue erase function (erasing cue signals)**
  Cue signals recorded on the disc can be erased without affecting the tracks.

NOTE:
During the edit mode, the eject lock function is set and the cartridge cannot be ejected.



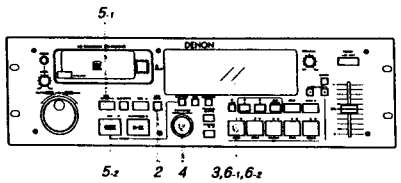
(2) Erasing Tracks ‹Track erase function›

1	**First check the track you to erase by monitoring in, then set the cue mode at that track.**
2	**Set the edit mode.** Press the EDIT/INPUT button. 03 03.05.06. 04 Edit Mode Lit Lit
3	**Set the erase mode.** Press the ERASE button. 03 03.05.06. 04 Track Erase? • **The LED lights.**
4	**Select the track erase mode.** Turn the select knob and select "Track Erase?". Cue Erase? ⇩ **Track Erase?** ⇩ All Erase? **NOTE:** Cue Erase? is not displayed if no cue signals is set.
5-1	**Erase the selected track.** Press the ERASE button. 03 03.05.06. 04 Track OK? **NOTE:** The track to be erased can be selected (or changed) by turning the select knob.
5-2	Press the ERASE button again. Complete! Lit ⇩ Edit Mode The track is erased and the mode returns to the edit mode. • **The LED turns off.**



(3) Erasing All the Tracks on the Disc ‹All erase function›

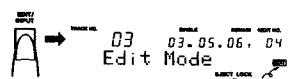
1	**Erasing All the Tracks on the Disc.**
2	**Set the edit mode.** Press the EDIT/INPUT button. 01 03.05.06. 02 Edit Mode Lit Lit
3	**Set the erase mode.** Press the ERASE button. 01 03.05.06. 02 Track Erase? • **The LED lights.**
4	**Select the all erase mode.** Turn the select knob and select "All Erase?". Cue Erase? ⇩ Track Erase? ⇩ **All Erase?** **NOTE:** Cue Erase? is not displayed if no cue signals is set.
5-1	**Erase all the tracks on the disc.** Press the ERASE button. 03 03.05.06. 04 All Erase OK?
5-2	Press the ERASE button again. Complete! Lit ⇩ Edit Mode All the tracks are erased and the mode returns to the edit mode. • **The LED turns off.**



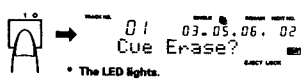
(4) Erasing Cue Signals «Cue erase function»

1 **Set the cue mode at the track containing the cue signal you want to erase.**

2 **Set the edit mode.**
Press the EDIT/INPUT button.

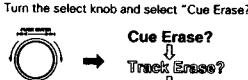


3 **Set the erase mode.**
Press the ERASE button.



• **The LED lights.**

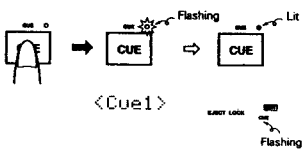
4 **Select the cue erase mode.**
Turn the select knob and select "Cue Erase?".



5-1 **Set the cue mode at the position of the cue signal you want to erase.**
Press the CUE SERCH button

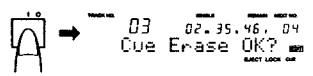
The cue direct search mode is set.

5-2 Press the CUE button.

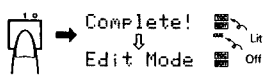


NOTE: Press the CUE button again to search for "Cue2", "Cue3", etc., and set the cue.

6-1 **Erase the cue signal.**
Press the ERASE button.

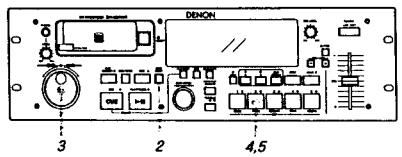


6-2 Press the ERASE button again.



The cue signal is erased and the mode returns to the edit mode.

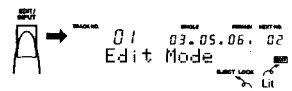
• **The LED turns off.**



(5) Dividing Tracks into Two Parts «Divide function»

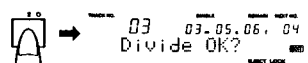
1 **Load the cartridge.**

2 **Set the edit mode.**
Press the EDIT/INPUT button.



3 **Use manual search, etc., to find the point at which you want to divide the track.**

4 **Set the divide mode.**
Press the DIVIDE button.



• **The LED lights.**

The section from three seconds before the divide point to the divide point is played repeatedly.

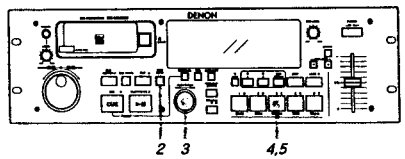
NOTE: To move the divide point, turn the SEARCH or SCAN dial.

5 **Divide the track.**
Press the DIVIDE button.

• **The LED turns off.**

The track is divided and the mode returns to the edit mode.

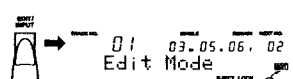
NOTE:
- The divide operation cannot be performed if cue signals are set for that track.
(Clear all the cue signals first.)



(6) Combining Two Tracks «Combine function»

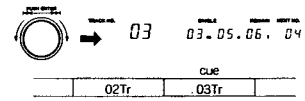
1 **Load the cartridge.**

2 **Set the edit mode.**
Press the EDIT/INPUT button.

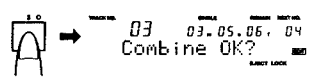


3 **Select the tracks to be combined.**
Use the select knob to set the cue mode at the second of the tracks to be combined.

To combine tracks 02 and 03:



4 **Set the combine mode.**
Press the COMBINE button.



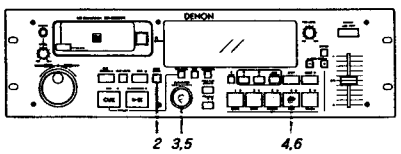
• **The LED lights.**

5 **Combine the tracks.**
Press the COMBINE button.

• **The LED turns off.**

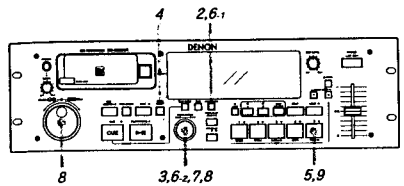
The tracks are combined and the mode returns to the edit mode.

NOTE:
- If the tracks have track names, the name of the second track will be cleared.
- The following tracks cannot be combined:
  1) When cued at the first track
  2) A stereo track with a monaural track
  3) Tracks containing cue signals



(7) Moving Tracks ‹Move function›

1	**Load the cartridge.**
2	**Set the edit mode.** Press the EDIT/INPUT button. 01 03.05.06. 02 Edit Mode Lit Lit
3	**Use the select knob to select the track to be moved.**
4	**Set the move mode.** Press the MOVE button. 03 03.05.06. 04 Move To 03Tr * The LED lights.
5	**Turn the select knob to select the destination of the track.** To move track 3 to track 1: Move To 03Tr ⇩ Move To 01Tr
6	**Move the track.** Press the MOVE button. Complete! Lit ⇩ Edit Mode * The LED turns off. The track is moved and the mode returns to the edit mode.



(8) Inputting (Changing) Names ‹Title function›

1	**Load the cartridge.**
2	**Display "DISC NAME" or "TRACK NAME".** Press the NAME/CAPS button. DISC NAME ⇩ TRACK NAME Display "DISC NAME" to input a disc name, "TRACK NAME" to input a track name.
3	**Use the select knob to select the track for which a name is to be input.**
4	**Press the EDIT/INPUT button to set the edit mode.**
5	**Select the name input mode.** Press the TITLE IN button. Lit 01 03.05.06. 02 Flashing Lit Lit If a name is already set, the name is displayed and the first character flashes.
6-1	**Select the type of characters to be input.** Press the NAME/CAPS button and select the type of characters. Capital letters ⇨ Small letters ⇨ Numbers ⇨ Symbols
6-2	Turn the select knob to select the character to be input. A⇨B⇨C⇨D⇨E⇨
7	**Enter the selected character.** Press the select knob. A ⇨ A Flashing Flashing (cursor)
8	**Continue inputting the name.** Repeat steps **5-1**, **5-2** and **6** to input the name. Turn the SEARCH dial to move the cursor to change or correct a name. When the SEARCH dial is turned, the cursor moves one space for each click of the dial. Backwards Forwards Press the ⊞ button to insert characters, the ⊟ button to delete characters.
9	**Cancel the name input mode.** Press the TITLE IN button. Lit The name input mode is canceled.

Input Characters

The following letters, numbers and symbols (ASCII code) can be selected using the NAME/CAPS button and the select knob:

Capital letters
SPABCDEFGHIJKLMNOPQRSTUVWXYZ

Small letters
SPabcdefghijklmnopqrstuvwxyz

Numbers
SP1234567890

Symbols
SP!"#$%&'()*+,-./:;<=>?@[¥]^_`{|}

SP_space

NOTE:
Disc and track names can be up to 100 characters long, but the maximum number of characters that can be set for the disc name and all the track names is 1700.

(9) Error Messages

Messages appear if editing could not be completely normally. The meanings of the messages are described below.

Message	Description
Protected	Disc's tab is set to record disable position.
Disc Type Err	Pre-mastered disc (disc on which recording is not possible) is loaded.
Can't Edit 10	Point to be erased unclear (cue erase operation).
Can't Edit 11	There are already 5 cue points (cue write operation).
Can't Edit 12	There is no space for names and cue data cannot be written (cue write operation).
Can't Edit 13	There is already a cue signal at this position (cue write operation).
Can't Edit 20	Dividing is not possible because the disc already contains 255 tracks.
Can't Edit 21	Dividing is not possible because you are at the beginning of the track.
Can't Edit 22	Dividing is not possible because the track is protected.
Can't Edit 23	Dividing is not possible because cue signals are set on that track.
Can't Edit 24	After dividing, the track name could not be given to the second track. (Dividing is completed)
Can't Edit 25	Dividing is not possible due to MD limitations.
Can't Edit 30	Combining is not possible because you are at track 1.
Can't Edit 31	Combining is not possible because the track is protected.
Can't Edit 32	Combining is not possible because cue signals are set on that track.
Can't Edit 33	Combining is not possible because the first track is protected.
Can't Edit 34	Combining is not possible because the track mode is different for the first and second tracks.
Can't Edit 35	Combining is not possible because cue signals are set for the first track.
Can't Edit 36	Combining is not possible due to MD limitations.
Can't Edit 40	Moving the same track is not possible.
Can't Edit 50	No more titles can be added because the maximum number of charcters has already been reached.

7 PRESET FUNCTIONS AND OPERATIONS

(1) List of Preset Functions

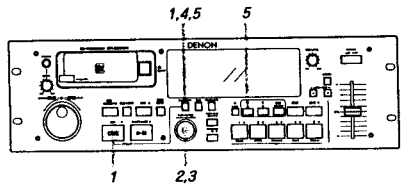
- Functions can be preset using the buttons on the front panel. These presettings are stored in a permanent memory, so they are not cleared even when the power is turned off.
- The functions shown on the table below can be preset. Set the functions according to the usage purpose to efficiently achieve even higher quality playback.
- One of the preset functions can be used to display information on this set (microprocessor version).

Preset function type	Description	Character display (as set upon shipment from factory)	No.
Play end mode	Play end mode selection	Finish Next	1
Auto cue	Auto cue on/off setting and startup level setting	CueDet.OFF	2
Auto increment	Auto increment selection	Auto Inc OFF	3
Auto increment	Auto increment level setting	Inc Det.–48dB	4
UTOC	Pre-UTOC on/off setting	Pre UTOC OFF	5
Stereo/mono	Stereo recording or mono recording selection	Rec Stereo	6
Copy management	Serial copy management on/off selection	SCMS INH	7
Auto stop	Setting of whether or not to automatically stop the servo functions	Sleep ON	8
Program 1	Setting of whether or not to play program 1	Program 1 OFF	9
Program 2	Setting of whether or not to play program 2	Program 2 OFF	10
Program 3	Setting of whether or not to play program 3	Program 3 OFF	11
E.O.M.	Setting of whether or not to display the EOM and display time setting	E.O.M. 10s	12
Preset clear	Setting for clearing presets and setting them to the initial values	Ini. Preset	13
Set information	Microprocessor version display	Ver. xxxx yyyy * 1 (xxxx yyyy is a number.)	14

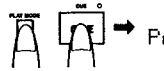
* 1 "xxxx" indicates the system microprocessor version, "yyyy" the servo microprocessor version.

(2) Presetting Procedure

- Presettings can be made when no cartridge is loaded or when in the stop, cue, pause or recording pause mode.



1 **Enter the preset mode.**
Press the CUE button while pressing the PLAY MODE button.



Character display: Preset Mode

2 **Select the preset item.**
Turn the select knob (|◀◀ – ▶▶|).

Turn the knob clockwise to move in the direction of the arrows, counterclockwise to move in the opposite direction.

Character display:
⇩ Finish Next ⇩ CueDet.OFF ⇩ Auto Inc OFF ⇩ Ver.**** ****

NOTE: The first preset item displayed is the last preset item displayed the last time the presettings were made.

3 **Change the preset values.**
Press the select knob.

The character display changes as shown below.

Before change	After change
Finish Next	⇨ Finish Recue
CueDet.OFF	⇨ CueDet.-60dB
Auto Inc OFF	⇨ Auto Inc Dig.

4 **Exit the preset mode.**
Press the PLAY MODE button.

The preset mode is canceled and the set returns to the previous mode.

5 **To set the presettings back to the initial settings (the settings set upon shipment from the factory)**
Turn the power on while holding in both the PLAY MODE and the A buttons. For the initial settings, refer to "(1) List of preset functions".

The character display changes as shown below.

Initial Set

NOTE:
If the message shown below appears, there is a problem with the preset memory. Contact a serviceperson.

Initial Error

(3) Detailed Description of Preset Functions

(* = initial setting)

1) "Finish (*)"
- Finish Stop : Stop mode is set after track playing is finished.
- * Finish Next : Standby mode is set at next track after track playing is finished.
- Finish Recue : Standby mode is set at playback start position after track playing is finished.

2) "CueDet. OFF (-**)dB"
- CueDet.OFF : Sound is not detected when cueing.
- CueDet.(-**)dB : Sound detection level setting for cueing. (-60/-54/*-48/-42/-36)

3) "Auto Inc OFF (*)"
- * Auto Inc OFF : No auto increment of track number.
- Auto Inc Dig. : Track number is automatically incremented during digital recording using subcodes on CDs or MDs (Q codes) or start IDs on DATs.
- Auto Inc Det. : Track number is automatically incremented during recording when level set in "5) "Inc Det. (-**)dB" setting is detected.

4) "Inc Det. (-**)dB"
- Inc Det.(-**)dB : Sound detection level for auto increment function. (-60/-54/*-48/-42/-36)

5) "Pre UTOC OFF (ON)" (Playback is possible up to that point even if power supply is cut off during recording or if recording stops due to some problem.)
- * Pre UTOC OFF : Pre-UTOC function off.
- Pre UTOC ON : Pre-UTOC function on.

6) "Rec Stereo (Mono)"
- * Rec Stereo : Record in stereo.
- Rec Mono : Record left channel signal in mono.

7) "SCMS INH (ENA)"
- * SCMS INH : Record onto disc same code as copy prohibit code in recording source.
- SCMS ENA : Record copy prohibit code on disc according to SCMS.

8) "Sleep ON (OFF)"
- * Sleep ON : Automatically turn the servo functions off if no button is operated for 30 minutes in the pause, standby or manual search mode.
- Sleep OFF : Do not automatically turn the servo functions off.

9) "Program 1 OFF (ON)"
- Program 1 OFF (ON) : Store the contents of program 1 when on. (Initial setting – "OFF")

10) "Program 2 OFF (ON)"
- Program 2 OFF (ON) : Store the contents of program 2 when on. (Initial setting – "OFF")

11) "Program 3 OFF (ON)"
- Program 3 OFF (ON) : Store the contents of program 3 when on. (Initial setting – "OFF")

12) "E.O.M. (**)sec"
- E.O.M. (**)sec : Set the EOM time. (5/*10/15/20/25/30/35)
- E.O.M. OFF : Do not use the EOM function.

13) "Preset Clr? (Ini. Preset)"
- Preset Clr? : Clear the presettings (set to the initial factory values).
- * Ini. Preset : Presettings set to initial factory defaults.

14) "Ver. xxxx yyyy" : Display the microprocessor version. ("xxxx yyyy" is a number.)

8 HANDLING CARTRIDGES

Discs are stored inside cartridges, so they can be handled easily without worrying about dust or fingerprints. Be careful of the following in order to keep recordings in optimum condition.

(1) Cautions on Handling

- Keep cartridges away from magnets and sources of strong magnetic forces. (Only for recordable discs)
- Put cartridges in their cases when carrying them.
- Do not apply labels other than the ones included when the discs are purchased.
- Use a soft, dry cloth to wipe any dirt off the surface of the cartridge.
- Do not open the shutter.
  Forcing the shutter open could break it.
  If the shutter is opened, dirt or dust may get inside and fingerprints may get on the disc.
- Do not bend, heat or throw cartridges.
- Water droplets may form on the surface if cartridges are moved suddenly from outside or any cold place to a warm place. If this happens, wait awhile before using them.

(2) Cautions on Storing

- Always remove cartridges from the set after recording or playing them.
- Do not put cartridges in the following places:
  - Places exposed to direct sunlight.
  - Hot places.
  - Humid or dusty places.

9 MESSAGES

Messages appear on the display when operating the set.
The meanings of the messages are described below.

Message	Description
Can't Edit **	Indicates that editing was not possible. (For details, refer to Page 30)
Can't Incrmnt	Indicates that the track number cannot be incremented by pressing the REC button during recording.
Can't Rec!	Recording is not possible because of a problem in the TOC recording enable data.
Complete!	Indicates that editing is complete.
Cue*	Indicates that the cue search operation is being performed. (* is the cue number.)
<Cue>********	Displayed at the beginning of the track name if cue signals are set for that track.
Disc Full	There is no more remaining time on the disc, or there are already 255 tracks on the disc.
Disc Type Err	Recording or editing is not possible with pre-mastered discs.
EEPROM Error	Displayed when changing the presettings if there is a problem with the memory storage operation.
Error **	Displayed when a system error occurs.
Exist A-B!	A and B points are set.
Initial Error	Displayed if there is a problem with the memory storage operation when the presettings have been reset (initialized).
Initial Set	Displayed when initializing the presettings.
No Data	No hot start data.
No Name	Indicates that no track name or disc name has been set.
No Program!	Indicates that no program has been input.
No Sel.Track	Displayed when the selected track does not exist on the disc.
No Track	Indicates discs containing disc names but no tracks.
Not Audio!	Data other than audio data is input.
Now Cue Src!	Cue direct search mode is on.
Now H Start!	Hot start data is loaded.
Now LOOP ON!	Loop is turned on.
Now Program!	This means that a program has been input.
Preset Prog*!	Program is preset. (* - 1 to 3)
Program Full	Displayed if you attempt to program a 26th step.
Protected	Displayed when you attempt to record or edit while the cartridge is in the accidental erasure prevention mode.
Rec Mono	Sound will be recorded in monaural.
Rec Stereo	Sound will be recorded in stereo.
Sleep	Indicates the sleep mode.
Track Full	Displayed when you attempt to set the recording mode on a disc containing 255 tracks.
UTOC Writing*!	Displayed while the UTOC is being written.

10 SYSTEM LIMITATIONS

(1) Track Number Limits

- Up to 255 tracks can be recorded when recording the tracks successively starting from the first track on blank or no-track discs. In the following cases, however, the number of tracks that can be recorded decreases:
  When editing has been performed.
  When there are scratches on the disc and tracks have been re-recorded.

(2) Recording Time Limits

- Recording is performed in units of approximately 2 seconds. Sections of less than 2 seconds still take up 2 seconds worth of space on the disc, so this decreases the actual recordable time.
- Scratched sections of discs are automatically eliminated from the recording time.
- Recording is no longer possible once the maximum number of tracks is reached, even if they take up less than the maximum recordable time. To record on such discs, first erase unneeded tracks. When this is done, it is not possible to record for longer than the time of the tracks that have been erased.
- The remaining time on the disc may not increase when short tracks (less than approximately 8 seconds) are erased.
- If there are many emphasis data on/off signals or other similar signals in a track, they are treated as divisions between tracks, so recording will not be possible regardless of the recording time and number of tracks.

(3) Editing Function Limits

- It may not be possible to combine a short track with another track.
- Tracks containing cue points cannot be divided or combined.

(4) Title Function Limits

- There are limits to the number of characters that can be used in disc and track names and to the total number of characters used for both. When writing names, the cursor will only move by the maximum number of writeable spaces. (after this no more characters can be input).

Track names:	Up to 100 characters
Disc names:	Up to 100 characters
Total:	Up to 1700 characters

- The number of characters that can be used in track names decreases when the following functions are used:

Cue point function:	Using one cue point decreases the number of characters that can be used by 5.
Play speed function:	Changing the play speed decreases the number of characters that can be used by 6.

- When a track with a track name is divided, both of the divided tracks are given the same name. However, if the number of characters writeable on the disc is near the limit, the second track may only have part of the track name.
- When two tracks with track names are combined, the name of the second track is erased.

(5) Other Limits

- In the program play mode, the record mode is not set even when the REC button is pressed.
  If the REC button is pressed, "Now Program!" is displayed for approximately 1 second, then turns off.
- In the program play mode, the editing mode is not set even when the EDIT button is pressed.
  If the EDIT button is pressed, "Now Program!" is displayed for approximately 1 second, then turns off.
- In the editing mode and during hot start loading and loop setting, the program play mode is not set even when the PROG. PLAY ON/OFF button is pressed.
- In the edit mode, the recording mode is not set even when the REC button is pressed.
- If the REC button is pressed while hot start data is loaded, "Now H Start!" is displayed for 5 seconds. If the REC button is pressed while "Now H Start!" is displayed, the recording pause mode is set. (The hot start data is cleared.)
- In the loop mode, the recording mode is not set even when the REC button is pressed.
  "Now LOOP ON!" is displayed for 1 second.
- The PROG. PLAY ON/OFF does not function in the loop mode. If pressed, "Now LOOP ON!" is displayed for 1 second.
- The PROG. PLAY ON/OFF does not function when hot start data is loaded.
- The LOOP button does not function in the programmed play mode. If pressed, "Now Program!" is displayed for 1 second.

11 SPECIFICATIONS

GENERAL

Type:	MiniDisc Recorder
Recordable/Playable Discs:	Playback: Pre-mastered MDs and recordable MDs Recording: Recordable MDs
Recording System:	Magneto-optical overwriting system (Magnetic field modulation)
Signal Compression System:	ATRAC (Adaptive Transform Acoustic Coding) version 4.0
Rotating Speed:	Approx. 400 to 900 rpm.
Recording/playback time:	74 min. (Stereo), 148 min. (Mono)

AUDIO SECTION

Channels:	2 channels (Stereo), 1 channel (Mono)
Sampling Frequency:	44.1 kHz
Quantization Bits:	A/D converter: 16 bit, D/A converter: 18 bit
Frequency Response:	20 to 20,000 Hz (±1.0 dB)
Total Harmonic Distortion:	0.02 % or less (Playback, A filter) 0.03 % or less (Recording, A filter)
Signal to Noise Ratio:	92 dB or higher (Playback, A filter) 84 dB or higher (Recording, A filter)
Channel Separation:	86 dB or higher (Playback, A filter) 80 dB or higher (Recording, A filter)
Analog Output:	(1 kHz, 0 dB playback)
Connector:	RCA jack
Output Level:	1.7 Vrms, 10 kΩ/kohms
Headphone Output:	20 mW (30 to 40 Ω/ohms)
Analog Input:	
Connector:	RCA jack
Input Level:	1.7 Vrms, 47 kΩ/kohms
Digital Input	
Connector:	RCA jack
Signal Format:	SPDIF or IEC-958 Type II
Input Level:	0.3 to 1.0 Vp-p, 75 Ω/ohms
Variable Pitch Control:	±8 %
Pitch Bend:	±9.9 %
Audio Start-up Time:	0.01 second less
Frame Search Accuracy:	1 frame (1/85 second)

DIMENSIONS:	482 (W) x 132 (H) x 128 (D) (18-31/32" x 5-13/64" x 5-3/64") (Not including feet, dials and terminals)
WEIGHT:	5.3 kg (11 lbs 11 oz)
POWER CONSUMPTION:	21 W
POWER SUPPLY:	AC 120 V ±10 %, 60 Hz (U.S.A. & Canada) AC 230 V ±10 %, 50 Hz (Europe, Asia & Others)

ENVIRONMENTAL CONDITIONS

Operating Temperature:	+5 °C to 35 °C
Humidity:	25 % to 85 %, non condensing
Storage Temperature:	–20 °C to 60 °C

* Specifications and design are subject to change without notice for purpose improvement.

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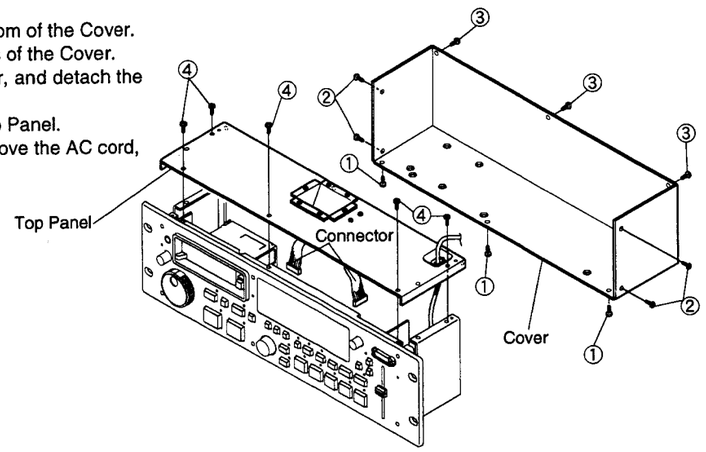
DISASSEMBLY

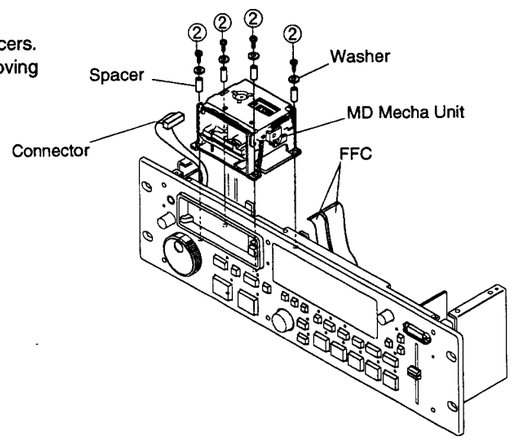
● Top Panel, Cover

(1) Remove 3 screws ① from the bottom of the Cover.
(2) Remove 4 screws ② on both sides of the Cover.
(3) Remove 3 screws ③ from the rear, and detach the Cover.
(4) Remove 5 screws ④ fixing the Top Panel.
(5) Disconnect 2 connectors and Remove the AC cord, then detach the Top Panel.



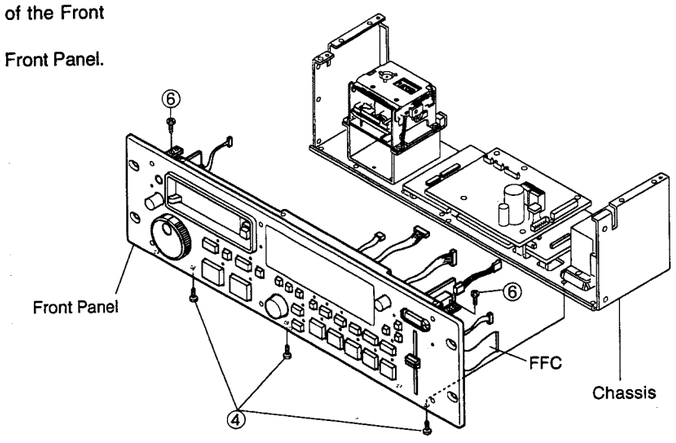
● MD Mecha. Unit

(1) Remove 4 screws ② and 4 washers and 4 spacers.
(2) Disconnect 1 connector and 2 FFCs while removing the MD Mecha. Unit upward.



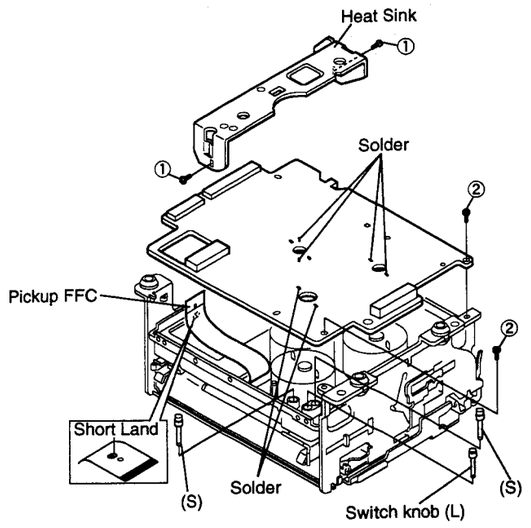
● Front Panel

(1) Disconnect 6 connectors and 1 FFC.
(2) Remove 3 screws ④ fixing the bottom of the Front Panel.
(3) Remove 2 screws ⑥ fixing the top of the Front Panel.



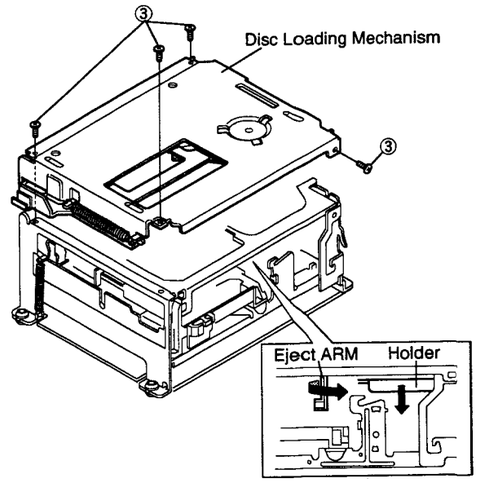
● Mechanism P.W.B.

(1) Remove 2 screws ①, and detach the Heat Sink.
(2) Remove 6 soldered motor terminals.
(3) Remove 2 screws ②.
(4) Short-circuit the short land of the Pickup FFC with solder.
(5) Release the Pickup FFC, and detach the Mechanism P.W.B.
(6) Remove 3 switch knobs (L) and (S).



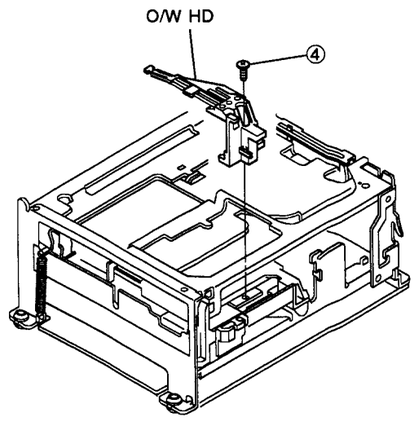
● Disc Loading Mechanism

(1) Lower the Holder by rotating and pulling the Eject Arm.
(2) Remove 4 screws ③, and detach the Disc Loading Mechanism.



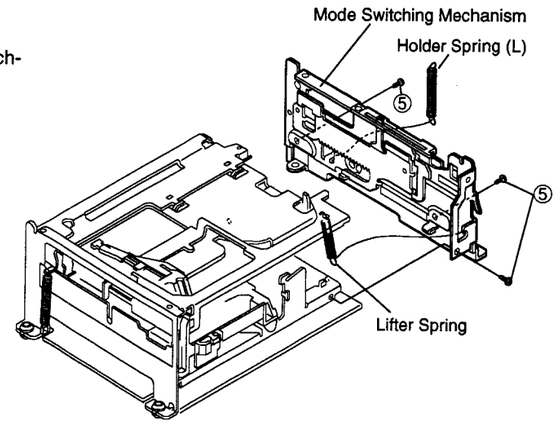
● Over Write Head

Remove 1 screw ④, and detach the O/W HD.



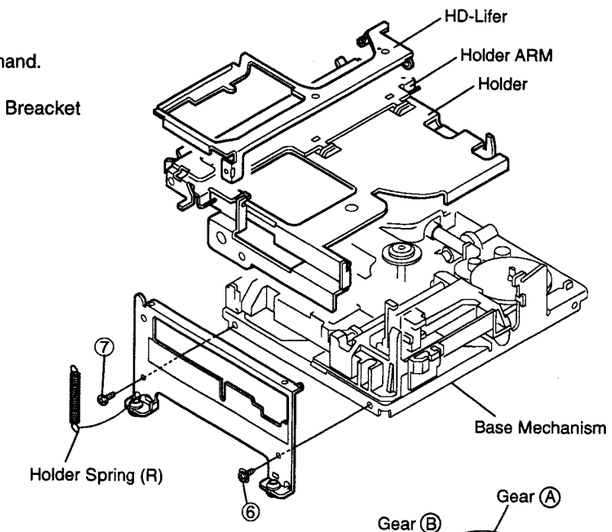
● Mode Switching Mechanism

(1) Release the Lifter Spring and Holder Spring (L).
(2) Remove 3 screws ⑤, and detach the Mode Switching Mechanism.



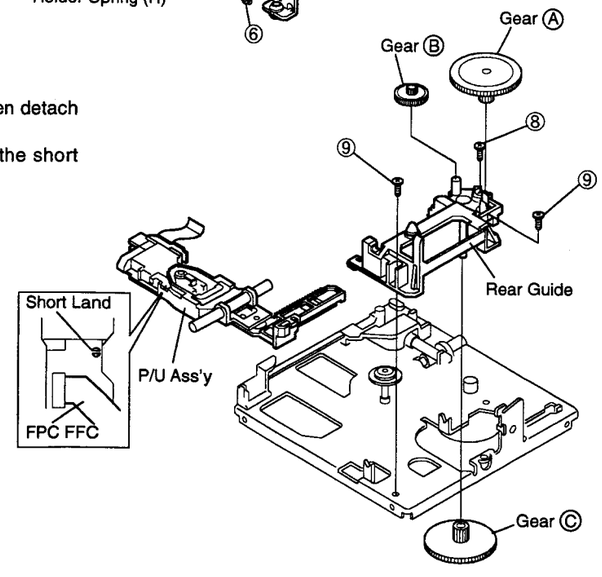
● Base Mechanism

(1) Complete the previous steps 1 ~ 3 beforehand.
(2) Release the Holder Spring (R).
(3) Remove 2 screws ⑥ and ⑦ from the Side Breacket (R).

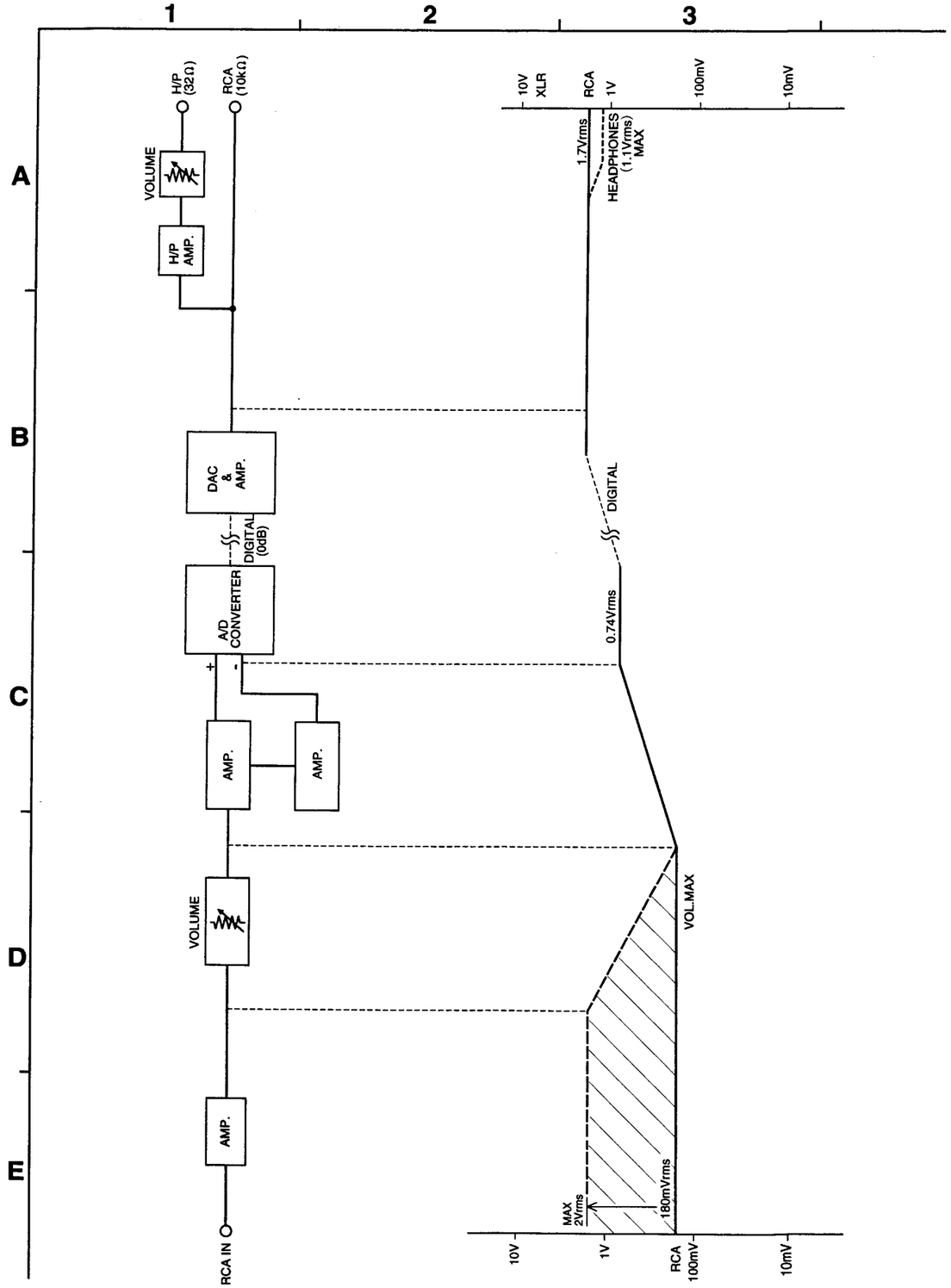


● Pickup Ass'y

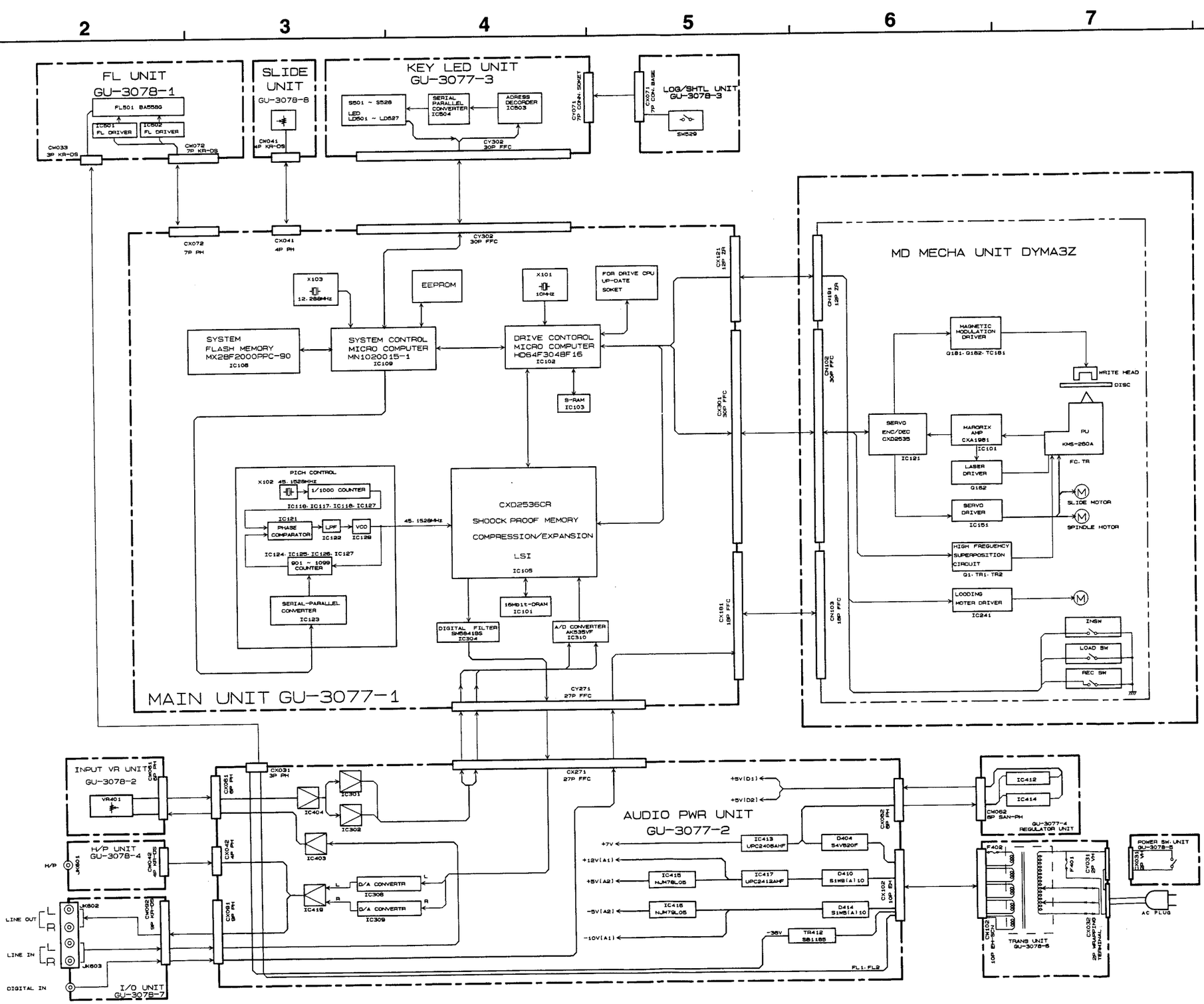
(1) Remove 3 gears Ⓐ Ⓑ Ⓒ .
(2) Remove 3 screws ⑧ and ⑨.
(3) Release 3 hooks from the Rear Guide, then detach the Pickup Ass'y.
(4) Release FPC-FFC after short-circuiting the short land on the Pickup Ass'y



LEVEL DIAGRAM



BLOCK DIAGRAM



SERVICE MODE

Service Mode

Setting Servise mode

While simultaneous pushing
CUE button and PLAY/PAUSE button,
turn the power switch ON.

Turn SELECT knob to select
"Check Servo?"

Press SELECT knob to set
the SERVICE mode, and
the "TEMP ADJUST" will be displayed.

Note:
• If you want to cancel the service mode, turn off the POWER Switch.

- Temperature compensation offset adjustment TEMP ADJUST
- Laser power adjustment LDPWR ADJUST Page 22
- Traverse adjustment EFBAL ADJUST Page 24
- Focus bias adjustment FBIAS ADJUST Page 25
- Focus bias adjustment check FBIAS CHECK Page 27
- Playback check mode CPLAY MODE
- Rec. Play check mode CREC MODE
- Nonvolatile memory mode EEP MODE — This mode is not used in service. If you have this mode while servicing, cancel this mode immediately by pressing the STOP button.

Don`t perform this adjustment in normal state.

The mode switches every time by turning the SELECT knob.

Key Functions

Key name	Function
Select Knob	Settlement of Parameter, Mode.
PLAY / PAUSE	Proceed forward. Settled.
STOP	Back to previous. Cancelled.
EDIT	Continuous Play when pressing it in STOP status, and Tracking Servo ON/OFF when pressing it while continued playing.
CUE	Stop of Continuous Playing / Continuous Recording.
Manual Forward Search key	The slider moves to the outer periphery direction while turning.
Manual Reverse Search key	The slider moves to the inner periphery direction while turning.
REC	Recording ON/OFF by pressing it while continuous playing.
PLAY MODE	Select the pit mode.
PITCH	Select the group mode.
TIME	Switching the contents of displaying. The display is changed by Pushing the switch every once.

Note:
• In service mode, the function of the erase protection knob is not detected. If you press REC key, in Traverse mode or Continuous recording mode, your recorded disk may be erased. Pay attention to your disk used for it.

Notice of adjustment
When replacing the following parts, adjust and check the items marked with ○.

Adjustment	Optical Pick-up	Mechanism P.W. Board		
		IC171	D101	IC101, 121, U1
1. Temperature compensation offset adjustment	×	○	○	○
2. Laser power adjustment	○	×	×	○
3. Traverse check	○	○	×	○
4. Focus bias adjustment	○	○	×	○
5. Error rate check	○	○	×	○

Creating the MO disk of continuous recording

• This disk is used for the focus adjustment bias and the error rate check.
The following describes how to create the MO disk of continuous recording.

1. Load a MO disk (blank disk) sold in the market.

2. Turn SELECT knob to display [CREC MODE].

3. Press PLAY/PAUSE button to display [CREC IN].

4. Press PLAY/PAUSE button again to display [CREC MID].
Recording will be started. Recording term should be within 5 minutes.

5. Press STOP button to stop recording.

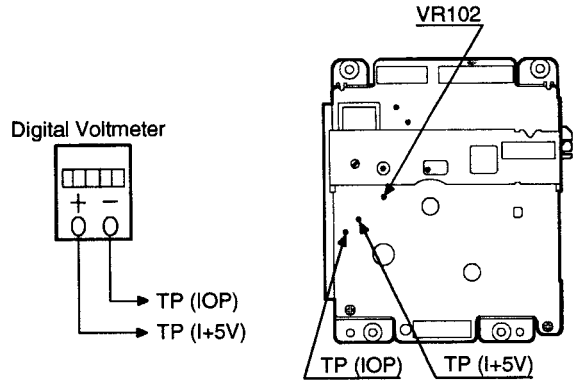
6. Press EJECT button to eject the MO disk.

Note:
• Do not apply any vibration while perforing continuous recording.

Laser Power adjustment
LDPWR ADJUST

Note:
• Don't look the emit lighting of the laser diode from just above to prevent you from the loss of eyesight.
• Pay special attention to handle the laser diode of the optical pick-up, since it is easy to have an electrostatic break.

Connection Diagram
• Connect the digital voltmeter to TP(IOP) and TP(I+5V).



Adjustment Method

1. Set the laser power meter on the object lens of the optical pick-up.
   (The optical pick-up is moved by pressing the manual search key.)
2. Turn SELECT knob to display [LDPWR ADJUST].
3. Press PLAY/PAUSE button twice to display [LD$4B+3.5mW].
4. Adjust the RV102 (APC ADJ) of the Mechanism P.W.Board so that the reading of the laser power meter becomes 3.4 to 3.5mW.
5. Press PLAY/PAUSE button to display [LD$96=7mW]. : Writing laser power adjustment
6. Check that the readings of the laser power meter and the digital voltmeter are within specified values below.

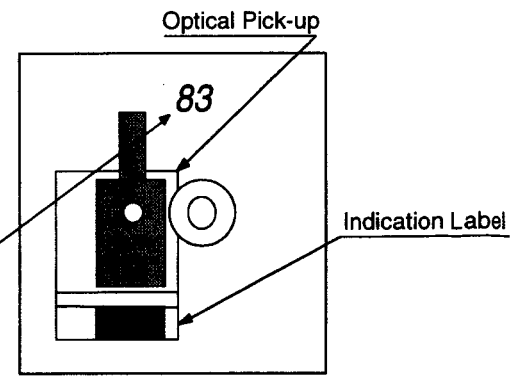
Specification

Reading of the laser power meter: 7.0 ±0.3mW
Reading of the digital voltmeter: ±10% of indicated value on the Optical Pick-up.

(Indication of the optical pick-up)

KMS-260A
XXXXX
0 8 2 5

The value with handwriting is Iop value.
The value indicated on the label is rounded off. In case of 82.5mA, the value 83 is shown.



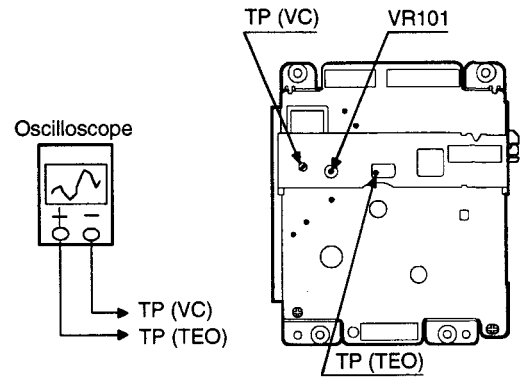
In this example, Iop=82.5mA
Iop(mA)=The reading(mV) of digital voltmeter ÷1 (ohm)

7. Press PLAY/PAUSE button to display [LD$0F=0.7mW].
   Check that the reading of the laser power meter is 0.70 ±0.1mW.
8. Press STOP button to display [LDPW ADJUST], and stop the laser emit lighting.
   (STOP key is accepted any time to press, and the laser emit lighting can be stopped.)

Note:
• Laser power adjustment and check should be performed at the ambient temperature 22°C ±2°C and humidity 50% ±5%.
(If the ambient condition differs, the deviation values should be corrected.)

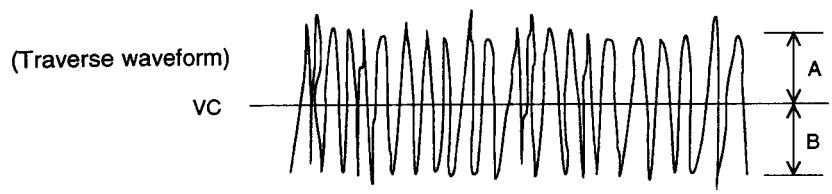
Traverse Adjustment
EFBAL ADJUST

Connection Diagram
• Connect the oscilloscope to TP(TEO) and TO(VC)



Adjustment Method

1. Load a MO disk sold in the at a market.
2. Press the manual search key to move the optical pick-up from the pit portion to outer periphery.
3. Turn SELECT knob to display [EFBAL ADJUST].
4. Press PLAY/PAUSE button to display [EFBAL MO-W].
5. Adjust the RV101 on the Mechanism P.W.Board so that the waveform on the oscilloscope becomes A=B.



6. Press PLAY/PAUSE button. (MO groove read power traverse adjustment)
7. Turn SELECT knob so that the waveform on the oscilloscope becomes A=B.
(The waveform is changed when pressing the automatic search key. The waveform is changed in approximate 3% steps by this adjustment, and it should be adjusted closest to A=B.)
8. Press PLAY/PAUSE button to save the adjustment result into the nonvolatile memory. In that time, [EFB=$_SAVE] is displayed in a moment, then the display will be changed to [EFBAL MO-P].
9. Press PLAY/PAUSE button to display [EFB=$_ MO-P].
The optical pick-up moves to the pit portion area automatically, and it is controlled by the servo.
10. Turn SELECT knob so that the waveform on the oscilloscope becomes A=B.
(The waveform is changed when pressing the automatic search key. The waveform is changed in approximate 3% steps by this adjustment, and it should be adjusted closest to A=B.)
11. Press PLAY/PAUSE button to save the adjustment result into the nonvolatile memory. In that time, [EFB=$_SAVE] is displayed in a moment and the display will be changed to [EFBAL CD], then the rotation of the disk automatically stops.
12. Press EJECT button to eject the MO disk.

13. Load the test disk TDYS-1.

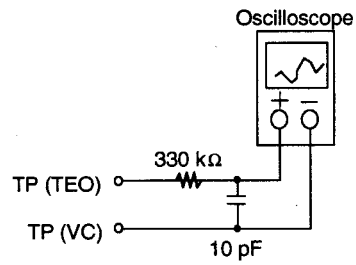
14. Press PLAY/PAUSE button to be controlled by the servo.

15. Turn the SELECT knob so that the waveform on the oscilloscope becomes A=B.
(The waveform is changed when pressing the automatic search key. The waveform is changed in approximate 3% steps by this adjustment, and it should adjusted closest to A=B.)

16. Press PLAY/PAUSE button to save the adjustment result into the nonvolatile memory. At that time, [EFB=$_SAVE] is displayed in a moment and the display will be changed to [EFBAL ADJUST].

17. Press EJECT button to eject the test disk TDYS-1.

Note:
- If the recorded disk is used for this adjustment, the data is erased when writing into the MO disk.
- If the traverse waveform is difficult to see, it becomes better by connecting the filter as shown below.



Focus Bias Adjustment
FBIAS ADJUST

Adjustment Method

1. Load the continuous recorded disk (Refer to "Creating the MO disk of continuous recording").

2. Turn SELECT knob to display [CPLAY MODE].

3. Press PLAY/PAUSE button 3 times to display [CPLAY MID].

4. Press PLAY/PAUSE button after displaying [C1=_____AD=____].

5. Press PLAY/PAUSE button to display [FBIAS ADJUST].

6. Press PLAY/PAUSE button to display [_____/ ___a=___].
The first 4 digit numerals show C1 error rate, the numerals after [/] show ADER, and the numerals after [a=] show the amount of focus bias.

7. Turn SELECT knob to find the amount of focus bias which has 220 of C1 error rate.

8. Press PLAY/PAUSE button to display [_____/ ___b=___].

9. Turn SELECT knob to find the amount of focus bias which has 220 of C1 error rate.

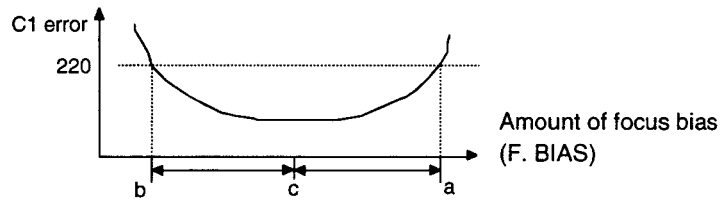
10. Press PLAY/PAUSE button to display [_____/ ___c=___].

11. At that time, check that the C1 error rate is less than 50 and ADER is 00, then press PLAY/PAUSE button.

12. If the value of display [(____)] in the [____-____- (____)] shows more than 20, press PLAY/PAUSE button.
If it is less than 20, press STOP button and perform the adjustment again from the step 2 above.

13. Press STOP button and press EJECT button to eject the continuous recorded disk.

Note:
- The relation between C1 error and the amount of focus bias is shown in the figure below. Find the point a and b in the figure below after adjusting the process described above. The best focus point c can be obtained by calculating automatically from the points a, b.
- Adjust the C1 error rate by reading the average value since it has fluctuation.



Checking error rate

Checking CD error rate

Check Method

1. Load the test disk TDYS-1.

2. Turn SELECT knob to display [CPLAY MODE].

3. Press PLAY/PAUSE button 3 times to display [CPLAY MID]. [C1=_____ AD= – –] is displayed.

4. Check that the C1 error rate is less than 20.

5. Press STOP button key to stop playing-back, and press EJECT button to eject the test disk.

Checking MO error rate

Check Method

1. Load a continuous recorded disk.

2. Turn SELECT knob to display [CPLAY MODE].

3. Press PLAY/PAUSE button 3 times to display [CPLAY MID]. [C1=_____ AD=___] is displayed.
   C1=_____ shows C1 error, AD=___ shows ADER.

4. Check that the C1 error rate is less than 50, and ADER is 00.

5. Press STOP button to stop playing-back, and press EJECT to eject the continuous recorded disk.

Focus Bias Check
FBIAS CHECK

Check Method

1. Load the continuous recorded disk.

2. Turn SELECT knob to display [CPLAY MODE].

3. Press PLAY/PAUSE button 3 times to display [CPLAY MID].
   Press STOP button after displaying [C1=_____AD=____].

4. Turn SELECT knob to display [FBIAS CHSCK].

5. Press PLAY/PAUSE button to display [_____/ ___c=___].
   The first 4 digit numerals show C1 error rate, the numerals after [/] show ADER, and the numerals after [c=] show the amount of focus bias.
   At this time, check that the C1 error rate is less than 50 and ADER is 00.

6. Press PLAY/PAUSE button, changes the display to [_____/ ___b=___].
   At this time, check that the C1 error rate is less than 220 and ADER is always 00.

7. Press PLAY/PAUSE button, changes the display to [_____/ ___a=___].
   At this time, check that the C1 error rate is less than 220 and ADER is always 00.

8. Press STOP button, and press EJECT button to eject the continuous recorded disk.

Note:
- In case C1 error or ADER rate exceeds 00 at the points a or b, focus bias adjustment may deviated.
  Perform readjustment.

CONFIRMING THE AUDIO

1. Necessary Equipment for Adjustment

Distortion-Factor Meter
VTVM
Low-Pass Filter (20kHz)
AF Oscillator (20Hz ~ 20kHz, +18dBm)
Reference Disc; Sony TDYS-1
Recordable Mini Disc

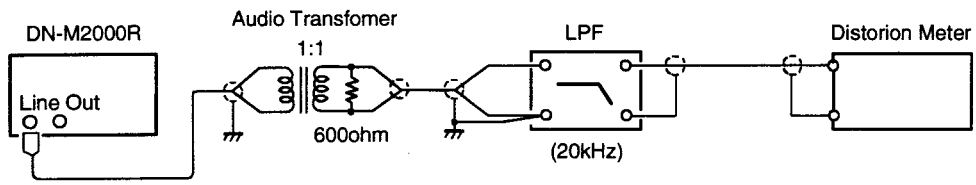
2. Prior to Starting the Adjustment

1) Audio circuit shall be adjusted after adjustment of servo circuit.

3. Adjustment of Super Linear Converter

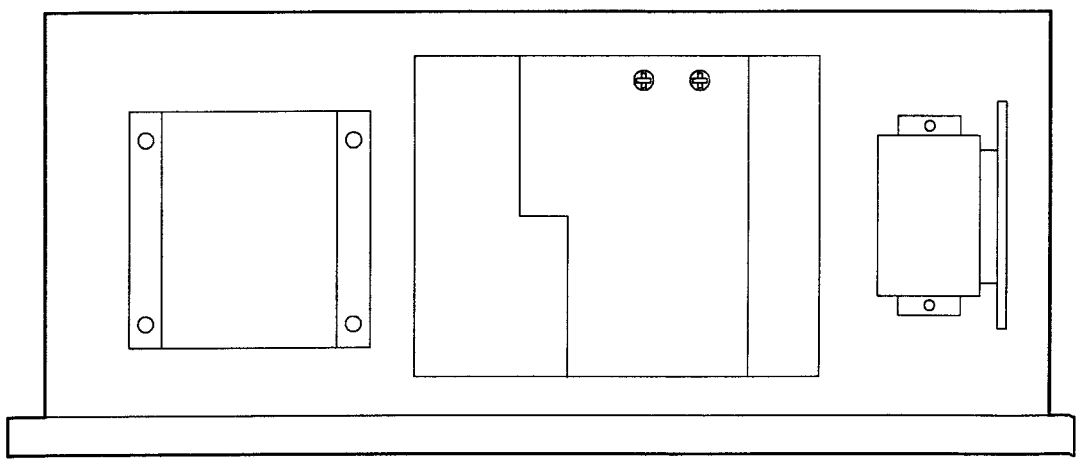
Adjustment of Super Linear Converter is only performed at a time the DA converter is replaced.

1) Connect the LINE OUT to the distortion-factor meter through the low-pass filter.
   Note: If your distortion-factor meter has unbalanced input terminals, 1:1 ratio audio transformer is required between the unit and the measuring instrument in order to float the active balanced outputs from the ground.



Super Linear Converter Adjustment

2) Turn the power switch ON.
3) Load the reference disc (Sony TDYS-1)
4) Set track No. "2" with SEARCH knob and press PLAY/PAUSE button.
5) Turn VR301 (L-ch) or VR302 (R-ch) on the MAIN unit so that distortion meter shows minimum distortion figu res.



Location of Distortion-Factor Adjustment VRs

ERROR CODE

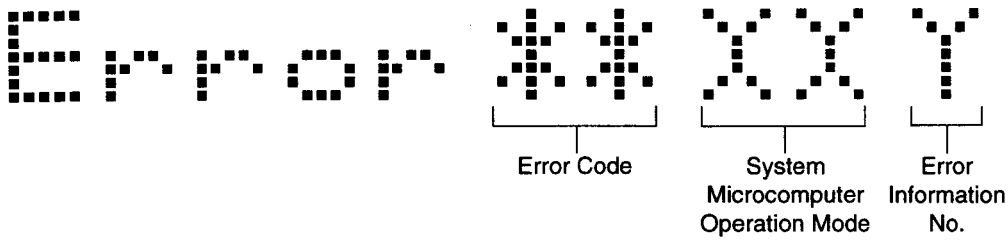
1. Setting in the Error Information Display Mode

(1) While pressing the CUE and the PLAY/PAUSE buttons simultaneously, turn the power switch ON.

(2) Turn the track select key to select "Error Disp?", then press the PUSH key to display " Error ✱✱ XX Y " or "No Error".

2. Viewing the Error Code Display

When completed item 1 above, turn the track select key clockwise to display the next error information by every step until the end error information, or turn the track select key counterclockwise to display the previous error information by every step until the start error information.



Error Code List

ERROR CODE	MODE	CONTENTS
52	REC	Computing miss error of the cluster.
53		DRAM full error when in the recording.
54		Address error of the P-FRA.
61		Transmitting end error (SCTX error) when in the recording.
62		ADIP read error when before the recording.
63		Time-over error when in the recording.
65	SEARCH	Search error when searching for the playback.
66		Search error when in the playback.
67		Search error when starting the recording.
68		Search error when in the recording.
69	REC	Head down error when starting the recording.
6B		Off track error when in the recording
6C	OTHER ERROR	Off track error according with ADIP jump detection.
71	TOC READ	TOC address continuous error.
72		TOC format is abnormal.
73	UTOC READ	UTOC address continuous error.
74		UTOC format is abnormal.
75	TOC READ	TOC search error.
76	UTOC READ	UTOC search error.
81	UTOC WRITE	ADIP read error when before the UTOC writing.
82		Trasmitting end error when in the UTOC writing.
83		Recording time over error when in the UTOC writing.
84		Search error when starting the UTOC writing.
85		Search error when in the UTOC writing.
86		Magnetic head down error when starting the UTOC writing.

ERROR CODE	MODE	CONTENTS
87	UTOC WRITE	Verify search error when in the UTOC writing.
88		Verify error when in the UTOC writing.
89		SHCK error when in the UTOC writing.
8a		ADIP jump error when in the UTOC writing.
91	OTHER ERROR	SRAM argument is abnormal.
92		Link P is abnormal in the SRAM.
93		Disc type error in the SRAM.
94		Track number error in the SRAM.
b2	REC PLAY INITIAL	Focus retry error.
b3		Spindle retry error.
b4		Adjustment time out error.
b5		Unable to adjust.
b6	INITIAL STOP	EEPROM read error.
b7	SERVICE	EEPROM write error.
b8		Unable to decide the adjustment.
bb	OTHER ERROR	Off set corrective error
c1	INITIAL STOP	Inner circle switch ON error even if the time (5 sec.) is over.
c2		Inner circle switch OFF error even if the time (5 sec.) is over.
f2	OTHER ERROR	LSI access error when the serial transmittal is end and the flag does not rise.
f5	REC	Head up error between 1 sec.
fe	OTHER ERROR	Decision condition error 1 when processing is possible continuously.
ff		Decision condition error 2 when unable to process continuously.
01		Microcomputer access error when the answer does not send out from the drive microcomputer.

System Microcomputer Operation Mode

d7	d6	d5	d4	d3	d2	d1	d0	
0	0	0	0	0	X	X	X	: Some error occurs in the no disc mode.
0	0	0	0	1	X	X	X	: Some error occurs in the loading mode.
0	0	0	1	0	X	X	X	: Some error occurs in the TOC/UTOC read mode.
0	0	0	1	1	X	X	X	: Some error occurs in the track search mode.
0	0	1	0	0	X	X	X	: Some error occurs in the time search mode.
0	0	1	0	1	X	X	X	: Some error occurs in the standby mode.
0	0	1	1	0	X	X	X	: Some error occurs in the play mode.
0	0	1	1	1	X	X	X	: Some error occurs in the pause mode.
0	1	0	0	0	X	X	X	: Some error occurs in the end monitor mode.
0	1	0	0	1	X	X	X	: Some error occurs in the manual pause.
0	1	0	1	0	X	X	X	: Some error occurs in the scan mode.

d7	d6	d5	d4	d3	d2	d1	d0	
0	1	0	1	1	X	X	X	: Some error occurs in the stop moving mode.
0	1	1	0	0	X	X	X	: Some error occurs in the stop mode.
0	1	1	0	1	X	X	X	: Some error occurs in the power save mode.
0	1	1	1	0	X	X	X	: Some error occurs in the REC search mode.
0	1	1	1	1	X	X	X	: Some error occurs in the REC standby mode.
1	0	0	0	0	X	X	X	: Some error occurs in the REC mode.
1	0	0	0	1	X	X	X	: Reserve
1	0	0	1	0	X	X	X	: Reserve
1	0	0	1	1	X	X	X	: Reserve
1	0	1	0	0	X	X	X	: Some error occurs in the REC pause mode.
1	0	1	0	1	X	X	X	: Reserve
1	0	1	1	0	X	X	X	: Some error occurs in the REC increment mode.
1	0	1	1	1	X	X	X	: Some error occurs in the REC monitor mode.
1	1	0	0	0	X	X	X	: Some error occurs in the level REC input waiting mode.
1	1	0	0	1	X	X	X	: Some error occurs in the UTOC write mode.
1	1	0	1	0	X	X	X	: Some error occurs in the hot start continual load mode.
1	1	0	1	1	X	X	X	: Some error occurs in the hot start mode.
1	1	1	0	0	X	X	X	: Some error occurs in the hot start pause mode.
1	1	1	0	1	X	X	X	: Some error occurs in the hot start single load mode.
1	1	1	1	0	X	X	X	: Some error occurs in the eject mode.
1	1	1	1	1	X	X	X	: Some error occurs in the edit mode.
X	X	X	X	X	0	0	0	: Some error occurs in the operation step 0.
X	X	X	X	X	0	0	1	: Some error occurs in the operation step 1.
X	X	X	X	X	0	1	0	: Some error occurs in the operation step 2.
X	X	X	X	X	0	1	1	: Some error occurs in the operation step 3.
X	X	X	X	X	1	0	0	: Some error occurs in the operation step 4.
X	X	X	X	X	1	0	1	: Some error occurs in the operation step 5.
X	X	X	X	X	1	1	0	: Some error occurs in the operation step 6.
X	X	X	X	X	1	1	1	: Some error occurs in the operation step 7 over.

3. Cancelling the Error Display Mode

To cancel the error display mode, turn the power swith OFF.

4. Deleting the Error Information

(1) Press the PUSH key to become the error information deletion mode when in the error information display mode, or press the PUSH key to return the error information display mode when in the error information deletion mode.

(2) When in the error information deletion mode, press the ERASE key to delete all memory error information in the EEPROM and display "No Error". If it is unsuccessful, displays "Delete NG".

HEAT RUN MODE

1. Setting in the Heat Run Mode

(1) While pressing the CUE and PLAY/PAUSE buttons simultaneously, turn the power swith ON.
(2) Turn the track select key to select "Heat Run?" .
(3) Press the PUSH key to become the heat run mode and display as following.

Heat Run Executed Times
with the decimal number

2. Operation in the Heat Run Mode

(1) Set the disc of write protect ON with recordable disc, high bright disc and premastered disc.
① Searches the first track which is reading the TOC/UTOC, starts playback when search is completed.
② In case the disc is less than 20 tracks, continues playback with all track and stops after playback is end.
③ In case the disc is more than 20 tracks, continues playback with the first track and end track only, and stops after playback is end.
④ After stop, reads TOC/UTOC again and repeats playback operation.

(2) Set the disc of write protect OFF with recordable disc.
① Reads the TOC/UTOC. In case there is recordable time, records for 1 min.
② After the record is completed, writes UTOC and stops it.
③ After stoped when UTOC write is completed, searches the first track which is reading TOC/UTOC.
④ After the first track search is completed continues playback from the first track to the end track.
⑤ After the end track playback is completed, executes operation ①.
⑥ After reading TOC/UTOC as operation ①. In case there is not recordable time, executes the disc erase and UTOC write.
⑦ Stops after writing UTOC as operation ⑥, and executes operation ①.
⑧ In case there is not recordable time in the first set disc, executes operation ⑥.

Note: In the operation, all key is invalid.

3. Error in the Heat Run Mode

If some error occurs in the heat run mode, displays as following:

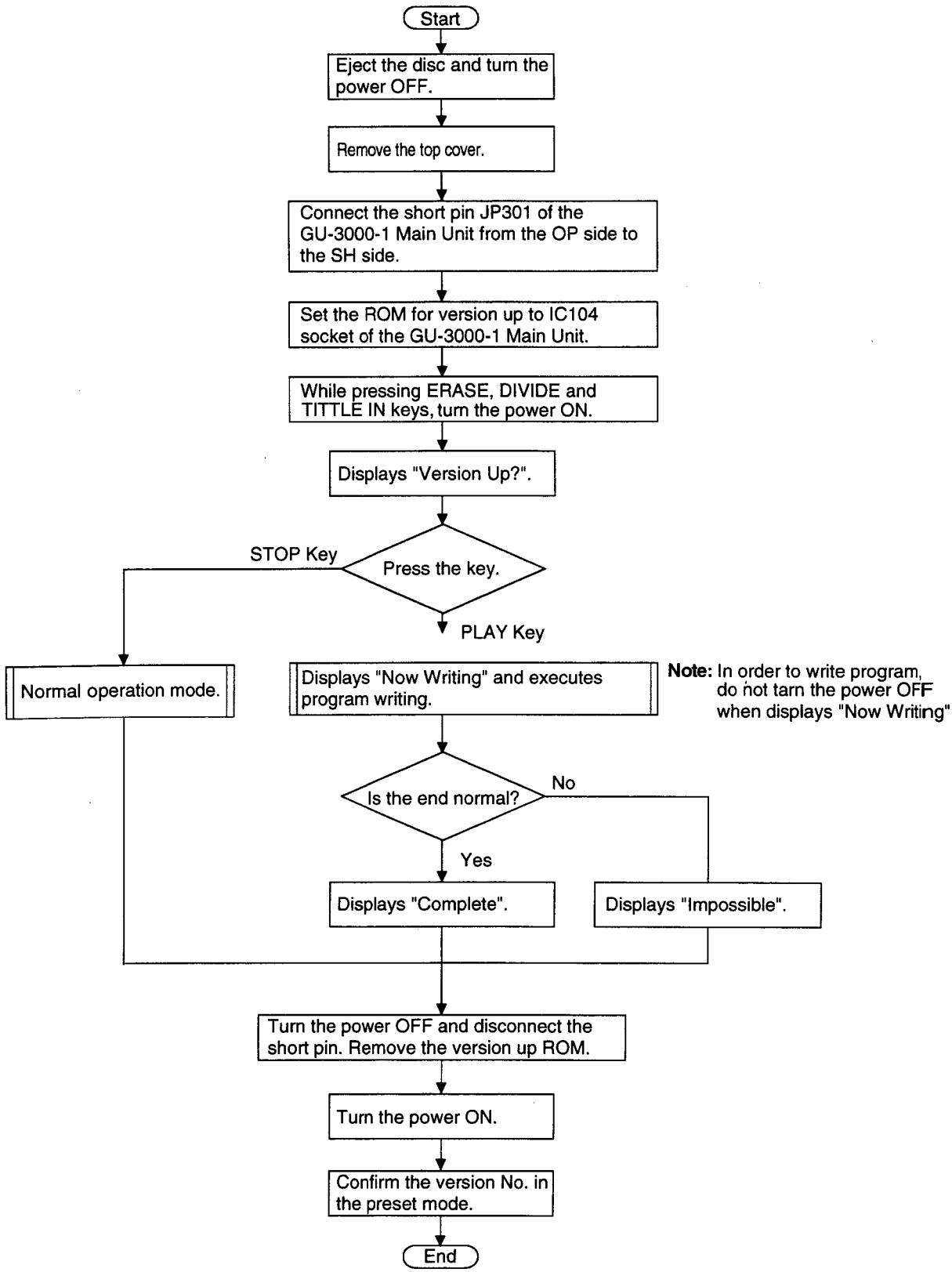
Error Code

Heat Run Executed Times
with the decimal number

4. Cancelling the Heat Run Mode

To cancel the heat run mode, turn the power OFF.

VERSION UP METHOD FOR DRIVE MICROCOMPUTER



IN CASE OF REPLACING FOR EEPROM

When replaced the EEPROM, it is necessary that the EEPROM should be initialized as the following.

(1) While pressing the PLAY MODE, A and STOP keys simultaneously, turn the power switch ON.

(2) Actuates the EEPROM initialization mode and displays "Initial Fac". When initialization is completed, preset setting, program, name display mode, PLAY mode, time code display mode and error code become the factory delivery status, and return to the normal display state.

(3) When initialization is unsuccessful, displays "Initial Error".

IN CASE OF FLAW AND DUST FOR PICK UP AND DISC

When the pick up or disc has flaw or dust, the below message is displayed. Clean the pick up or replace the disc, confirm it again. (Below message contents did not memory in the EEPROM error code.)

"REF NG" : Automatical adjustment is not executed properly.
(Operation with default adjustment value)

"EEPROM NG" : EEPROM of mechanism is not properly.
(Operation with default adjustment value)

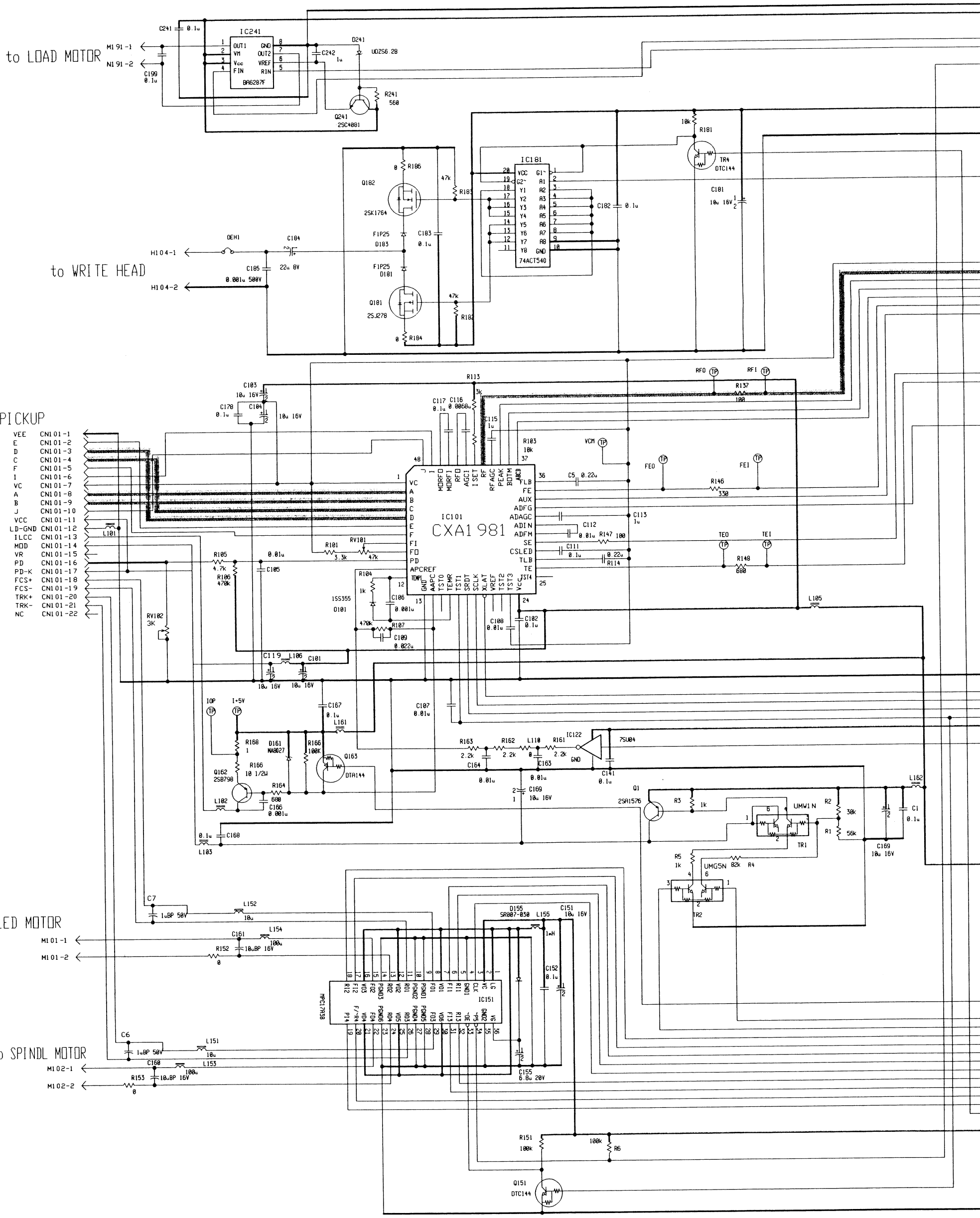
"HEAD NG" : Some trouble occurs on the magnetic head.

"BAD CONDITION" : Some trouble occurs between the system microcomputer and mechanism microcomputer comunication.

Time code display blinks (2 sec. interval) at playback : Unable to read address at playback with wrong address.

SCHEMATIC DIAGRAM (1/4)

1 2 3 4 5 6



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WARNING:

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WARNING:

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6 7 8 9 10 11

A B C D E F G H

CN191-1 GND
CN191-2 VDD
CN191-3 SW7
CN191-4 SW3
CN191-5 LDIN
CN191-6 LDOUT
CN191-7 GFS
CN191-8 DRVCTL
CN191-9 SHCKEN
CN191-10 256FS
CN191-11 NC
CN191-12 SW4

SW7
SW3
SW4

L122 100u

C131 0.047u
47 R140
R134 330
C133 0.0047u
C132 1u
R133 1M
C130 470
C129 0.47u
R132
C128 0.01u
C125 0.047u
R139 47
R129 330
C126 1u
C127 0.1u
C135 0.1u
C136 100u 6.3V
R130 470
R145 1M
470 R136 1.5k
R135
1M R131 10k
R128 1.5k

IC121
CXD2535

75 76 SE TE AUX2 DCHG TEST6 TEST1 ADFG TS25 LDDR TRDR TFDR FFDR DVdd FRDR FS4 SRDR SFDR SPRD SPFD DCLO DCLI XOCL OFTRK CDUT AVss
AVss ADRB ADRT AVdd TEST3 ADIO VC AUXI FE ABCD BDTM PEAK FILO FILI PCO CLTV AVss RFI BIAS ASYI ASYO AVdd DIFO DIFI DICV
50 51 DVss DIPO TEST2 MVCI RADF EFMO XPLCK GFS GTOP WFCK RFCK WDCK DVdd XBCK MCLK XTAI XTAO LRCK BCK C2PO DTO DYI DIDT DDDT DOVF
100 1 26 25 AVss FOK DFCT SHCK SHCKEN WRPWR DIRC SWDT SCLK XLAT SRDT SENS ADSY SQSY XRST TEST4 CLVSCK TEST5 CDUT DIN FMCK ATER REC DVss

0.1u C134
0.1u C123
MCLK TP
L121

R144 100
R125 100
R120
R124 100
100

C2 470
R8 470

U1 L88MS05T
C194 100u 16V
C3 1u
C4 0.1u
C121 22u 16V
C191 100u 16V

CN103-1 MCLX
CN103-2 GND
CN103-3 512FS
CN103-4 LRCK
CN103-5 BCK
CN103-6 C2PO
CN103-7 DATA
CN103-8 DIDT
CN103-9 DODT
CN103-10 GND
CN103-11 GND
CN103-12 VDD
CN103-13 VDD
CN103-14 STB
CN103-15 REC
CN103-16 DIN
CN103-17 GND
CN103-18 DOUT

L195 ACF321825-101

R123 330

0 10k
100k R9
10k R143
R142
R122

L162
C1 0.1u

SW1
SW5
SW6

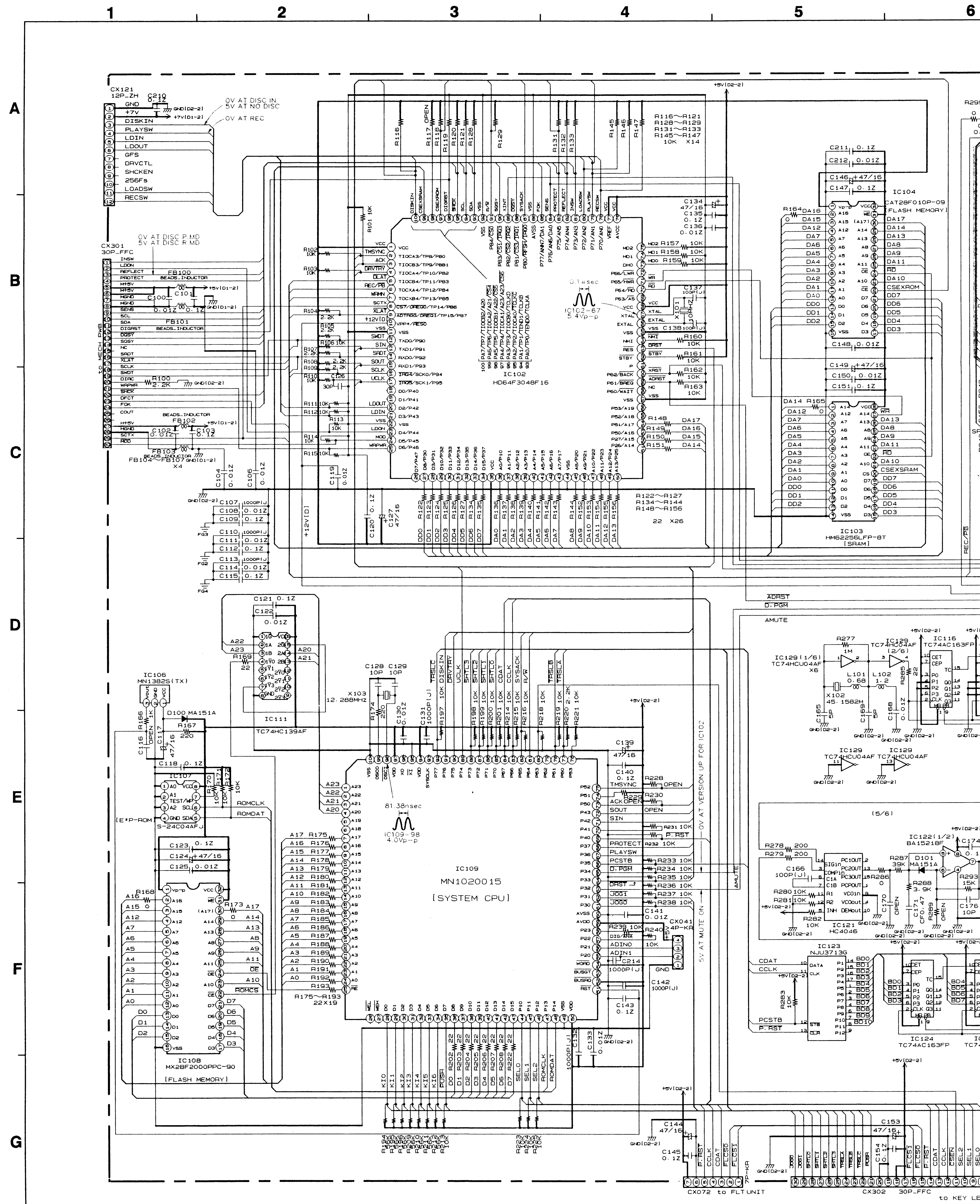
CN102-1 SW1
CN102-2 LDON
CN102-3 SW5
CN102-4 SW4
CN102-5 M+5V
CN102-6 M+5V
CN102-7 MGND
CN102-8 MGND
CN102-9 SDA
CN102-10 SCL
CN102-11 SENSE
CN102-12 XRST
CN102-13 DQSY
CN102-14 SQSY
CN102-15 NC
CN102-16 SRDT
CN102-17 XLAT
CN102-18 SCLK
CN102-19 SWDT
CN102-20 DIRC
CN102-21 WRPWR
CN102-22 SHCK
CN102-23 DFCT
CN102-24 FOK
CN102-25 CDUT
CN102-26 DFTR
CN102-27 H+5V
CN102-28 HGND
CN102-29 SCTX
CN102-30 MOD

C122 0.01u
R121 100k
C142 100
C143 100
C144 100

C171 0.1u
IC171
1 NC1 2 NC2 3 NC3 4 GND
8 Vcc 7 TEST 6 SCL 5 SDA
24LC01B
R171 10k
R170 10k

+B LINE
SIGNAL LINE

SCHEMATIC DIAGRAM (2/4)



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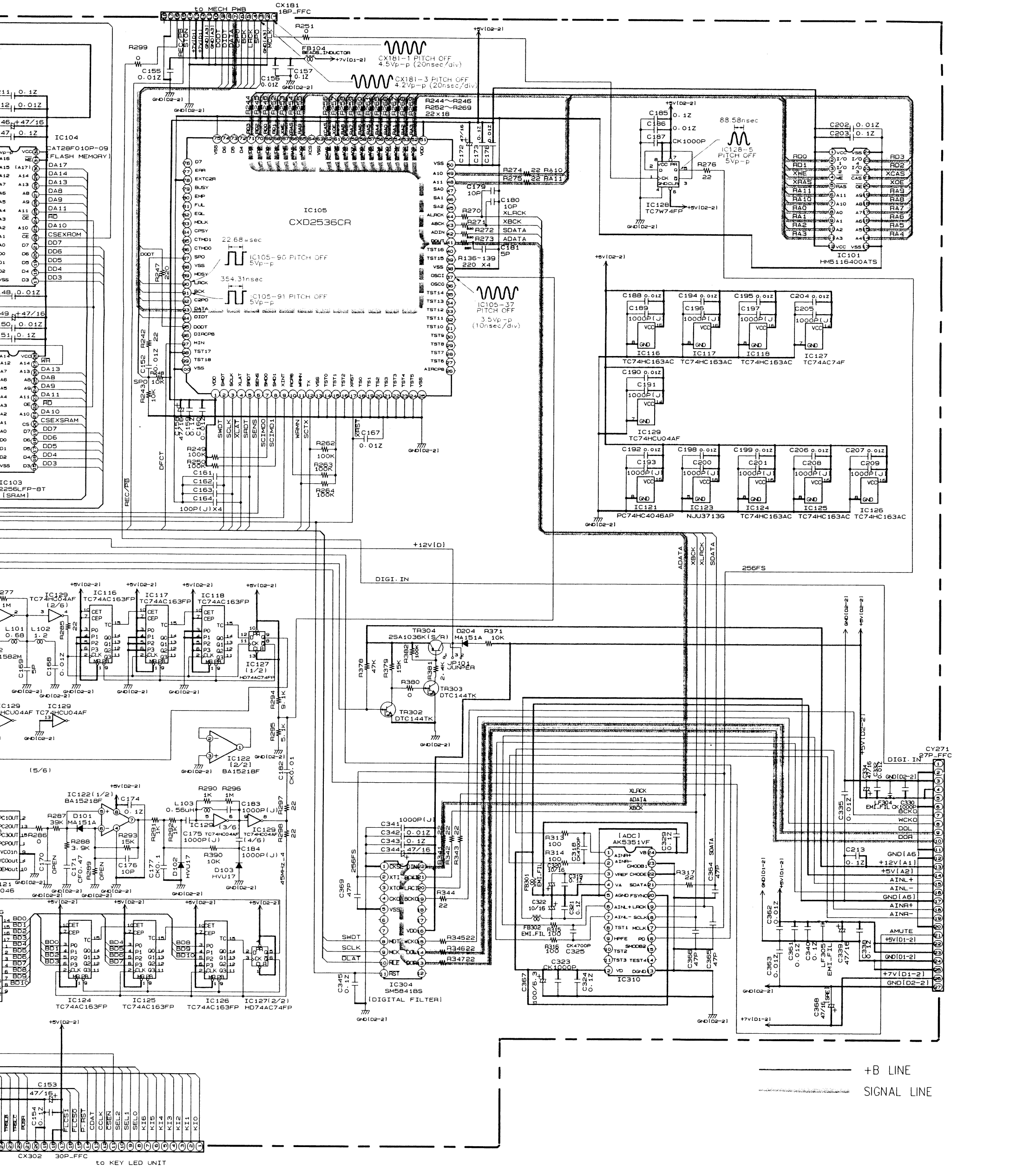
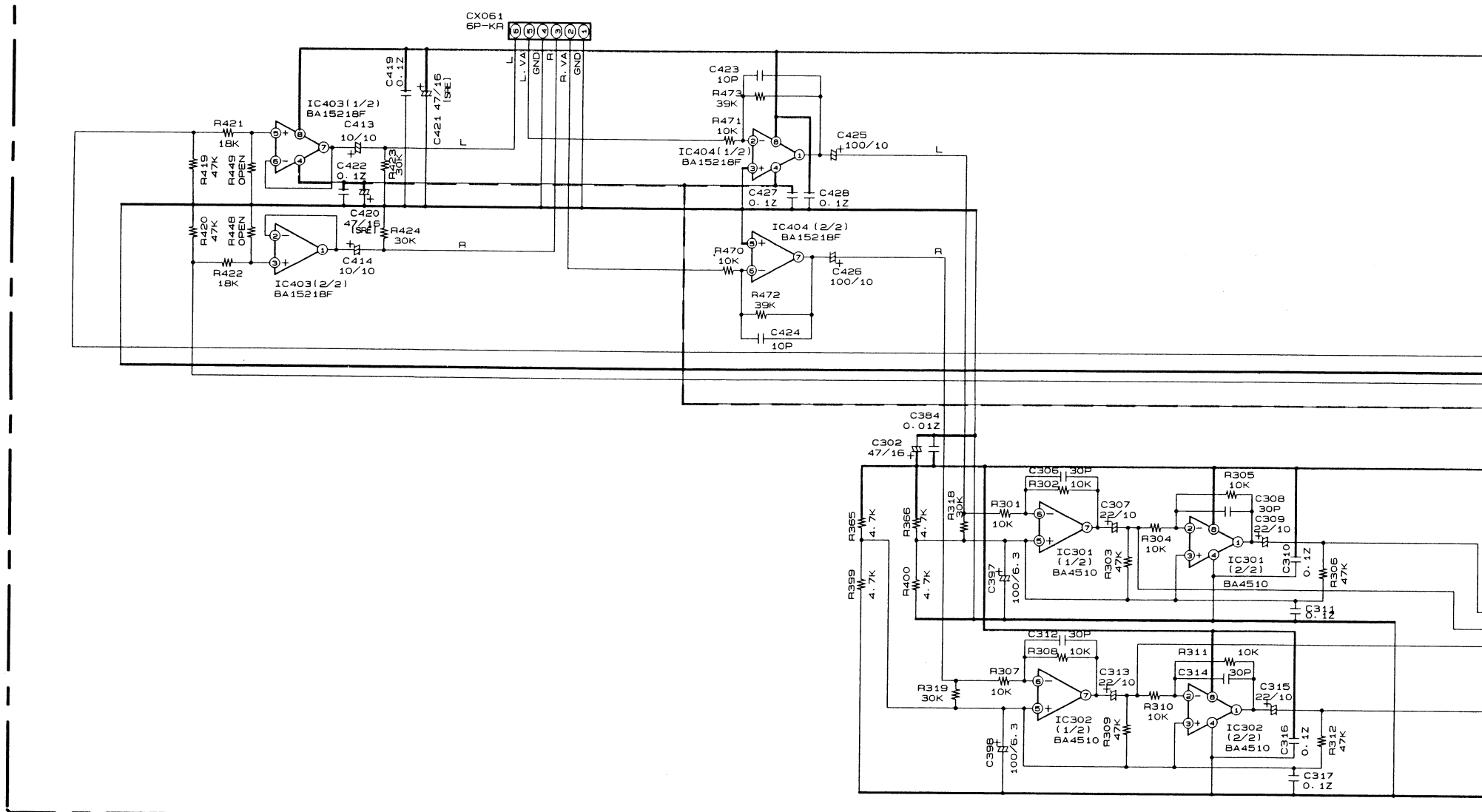
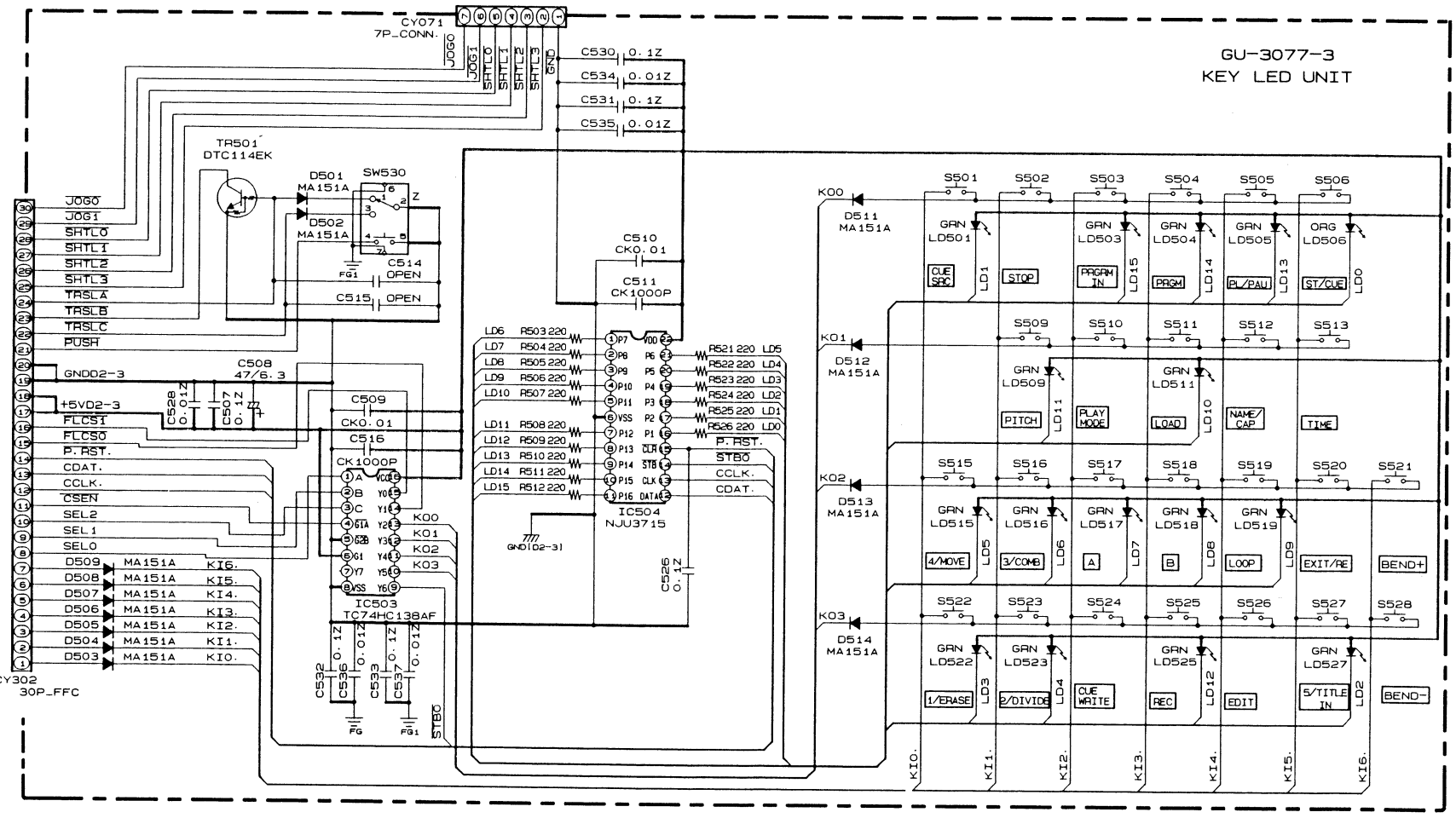

to MECH PWB
CX181
18P_FFC
IC105
CXD2536CR
IC104
CAT28F010P-09
[FLASH MEMORY]
IC103
256LFP-8T
[SRAM]
IC101
HM5116400ATS
IC128
TC7W74FP
IC116
TC74AC163FP
IC117
TC74AC163FP
IC118
TC74AC163FP
IC124
TC74AC163FP
IC125
TC74AC163FP
IC126
TC74AC163FP
IC127(2/2)
HD74AC74FP
IC129
TC74HC04AF
IC122(1/2)
BA15218F
IC122(2/2)
BA15218F
IC304
SM5841BS
[DIGITAL FILTER]
[ADC]
AK5351VF
IC310
IC116
TC74HC163AC
IC117
TC74HC163AC
IC118
TC74HC163AC
IC127
TC74AC74F
IC129
TC74HCU04AF
IC121
PC74HC4046AP
IC123
NJU3713G
IC124
TC74HC163AC
IC125
TC74HC163AC
IC126
TC74HC163AC
TR304
2SA1036K(S/R)
TR303
DTC144TK
TR302
DTC144TK
D204
MA151A
D101
MA151A
D102
HVU17
D103
HVU17
VP101
CUNNER
CX302
30P_FFC
to KEY LED UNIT
CY271
27P_FFC
DIGI.IN
+12V[D]
256FS
XLRCK
ADATA
XBCK
SDATA
+B LINE
SIGNAL LINE

SCHEMATIC DIAGRAM (3/4)

1 2 3 4 5 6





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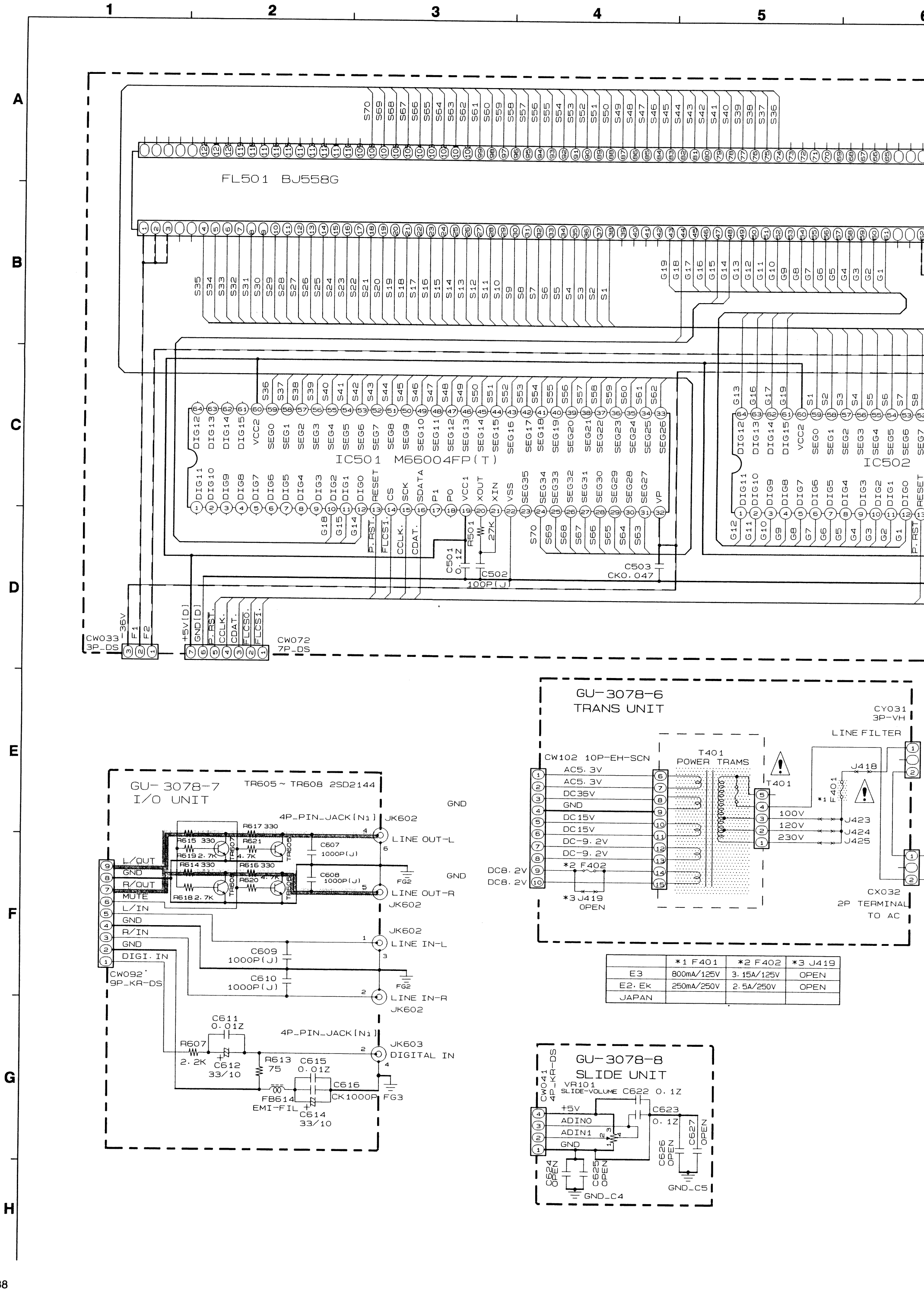
6 7 8 9 10 11

A B C D E F G H

IC308 PCM61P [DAC]
IC309 PCM61P [DAC]
C376 0.1Z
C383 0.1Z
C378 0.1Z
C392 0.1Z
C349 0.1Z
C351 0.1Z
C353 0.22Z
C354 0.22Z
C357 680P(J)
C358 680P(J)
C359 CK5600P
C360 CK5600P
C337 470/16
W10 OPEN
R394 470K
VR301 100KB
R395 200K
R396 1M
R351 820
R352 47K
R354 470K
VR302 100KB
R355 200K
R356 1M
R357 820
R358 47K
C350 0.1Z
C370 0.1Z
C356 100/10
TR409 DTA124XKA
TR410 DTC114EK
D405 MA151A
R452 47
C429 220/25
R451 2.7K(1W)
R450 200K
C417 100/10
R433 30K
C418 100/10
R434 30K
CX091 9P-KR
L/OUT
GND
R/OUT
MUTE
L/IN
GND
R/IN
GND
DIGI. IN
R489 10
R460 47K
R461 47K
R462 3.3K
IC430 TC7WU04F [1/3]
R465 OPEN
R463 2.2K
R464 OPEN
IC430 [2/3] TC7WU04F
C499 0.01Z
C498 CK1000P
IC430 [3/3] TC7WU04F
C487 56P
C488 56P
IC419 (1/2)
R415 51K
R416 51K
R417 3.9K
R418 3.9K
R439 30K
R437 4.3K
R440 30K
R438 4.3K
C489 100/10
C490 100/10
IC419 (2/2) BA15218F
C494 10/16
C492 CK0.01
C493 10/16
C491 CK0.01
CX042 4P-KR
Lch
GND
Rch
MUTE
TO H/P UNIT
CX062 6P-PH
CW062 6P SUN CONN. BASE
IC412 NJM7805FA(S)
IC414 NJM7805FA(S)
C543 0.1Z
C540 0.1Z
C542 0.1Z
C541 0.1Z
GU-3077-4 REGULATOR UNIT
CX271 27P_FFC
DIGI. IN
GND[D2-1]
+5V[D2-1]
GND[D2-1]
BCKO
WCKO
DOUTL
DOUTR
GND[A6]
+12V[A1]
+5V[A2]
AINL+
AINL-
GND[A6]
AINR+
AINR-
GND[A6]
AMUTE
+5V[D1-1]
GND[D1-1]
+7V[D1-1]
GND[D2-1]
C401 OPEN
C402 0.1Z
C403 0.1Z
C404 0.1Z
C405 OPEN W11
C448 0.1Z
C450 100/10(KME)
IC413 UPC2406AHF
C455 0.1Z
C453 100/10(KME)
C495 0.1Z
C454 100/10(KME)
D413 MA151A
C456 0.1Z
D409 S4VB20F
C457 12000/25(SMG)
J102 OPEN
J101
C406 0.1Z
C407 OPEN
FG5
CX102 10P-EH
AC 5.3V
AC 5.3V
DC36.7V
GND
DC15V
DC15V
DC-9.2V
DC-9.2V
DC8.2V
DC8.2V
IC415 NJM78L05AT
IC417 UPC2412AHF
C458 0.1Z
C470 100/10(KME)
C460 0.1Z
C462 100/16(KME)
C464 0.1Z
C466 1000/35(KME)
C459 0.1Z
C471 100/10(KME)
C461 0.1Z
C467 1000/16(KME)
IC416 NJM79L05AT
D410 S1WB(A)10
C409 OPEN
C408 OPEN
D414 S1WB(A)10
CX031 3P-KR
-36V-1
FL1-1
FL2-1
-24V
-31V
CX031-2 (10mSEC/div)
ZD402 HZS7B-1
R486 100K
C468 47/63
TR412 2SB1185(E/F)
D411 1SR139-200T62
D412 1SR139-200T62
R487 3.3K
R447 100K
C469 330/63
R485 100
R486 100
ZD401 MTZJ39A
S521
S528
BEND+
BEND-
LD2
KI6.

+B LINE
−B LINE
SIGNAL LINE

SCHEMATIC DIAGRAM (4/4)



	*1 F401	*2 F402	*3 J419
E3	800mA/125V	3.15A/125V	OPEN
E2.Ek	250mA/250V	2.5A/250V	OPEN
JAPAN			

GU-3078-1
FL UNIT

IC502 M66004FP(T)

GU-3078-2
INPUT VR. UNIT

VR401 V0930FA503K
50K

6P_KR_DS

GU-3078-3
JOG/SHTL UNIT

7P_CONN
CX071

GU-3078-4
H/P UNIT

VR601 2K
V0920B17FA202K

4P_KR-DS

JK601
H/P_JACK

GU-3078-5
POWER SW. UNIT

CY031
3P-VH

LINE FILTER

CX031
3P-VH

POWER_SW
S401

CX032
2P TERMINAL
TO AC

AC PLUG

*3 J419
OPEN
OPEN

+B LINE

−B LINE

SIGNAL LINE

NOTICE

ALL RESISTANCE VALUES IN OHM. k=1,000 OHM M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:

Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

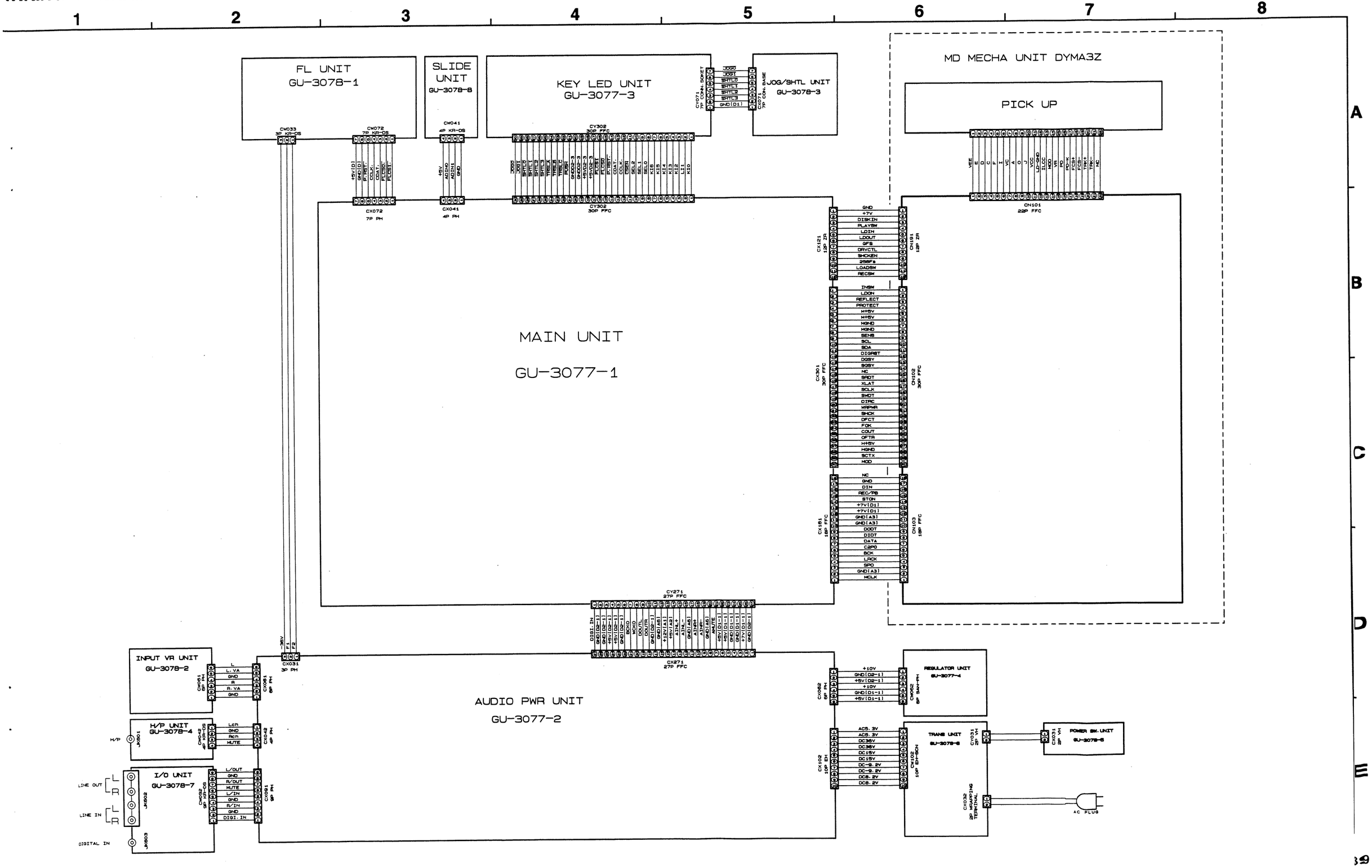
CAUTION:

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is detective.

WARNING:

DO NOT return the unit to the customer unit the problem is located and corrected.

WIRING DIAGRAM



PRINTED WIRING BOARD

1 2 3 4 5 6 7 8

A B C D E

GU-3077 P.W.B. UNIT

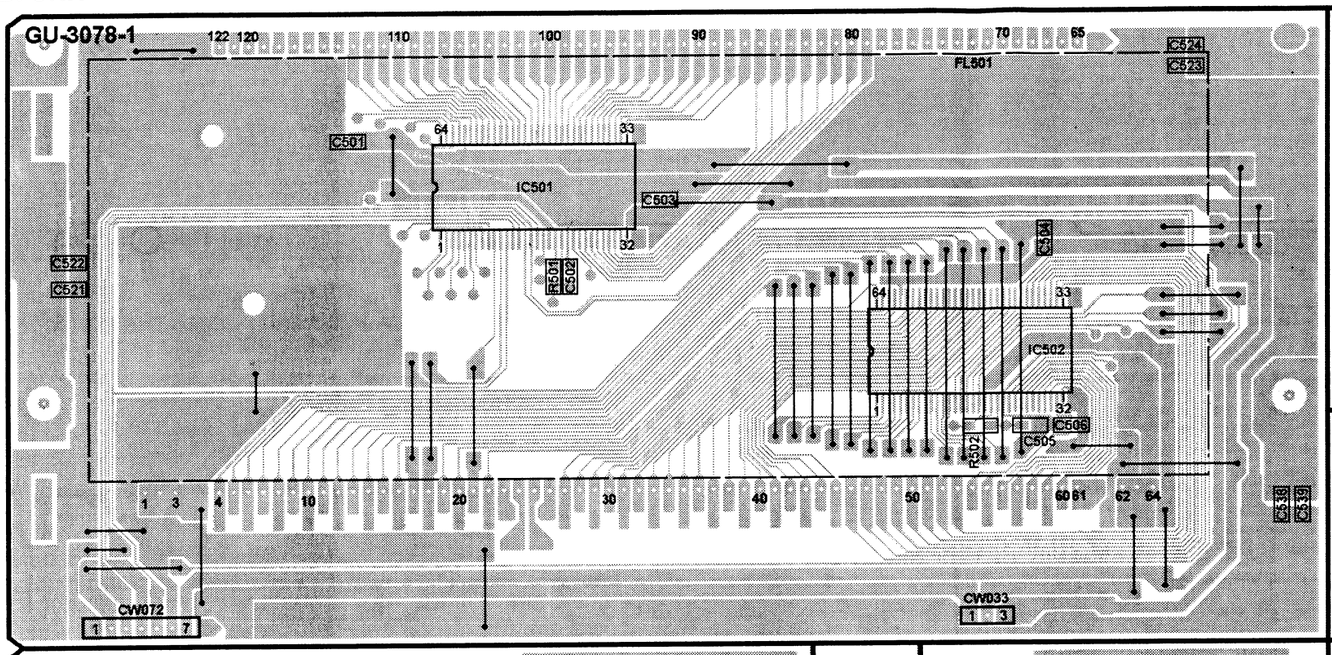
GU-3077-2

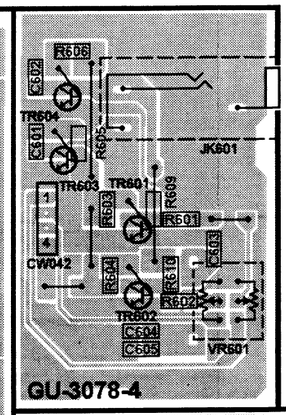
GU-3077-4

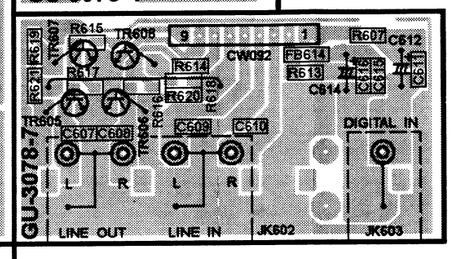
GU-3077-1

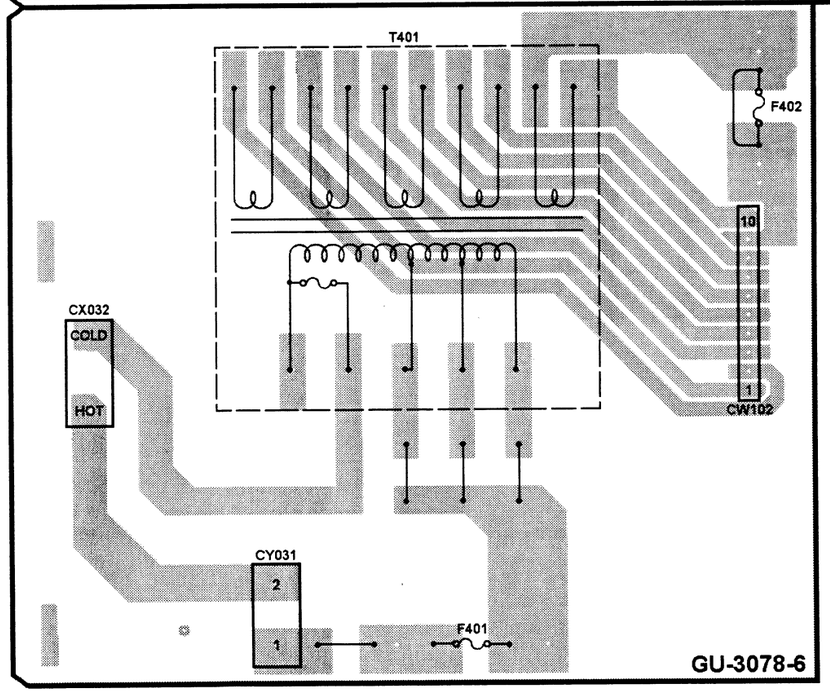
GU-3077-3

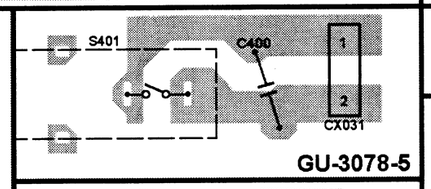
GU-3078 P.W.B. UNIT

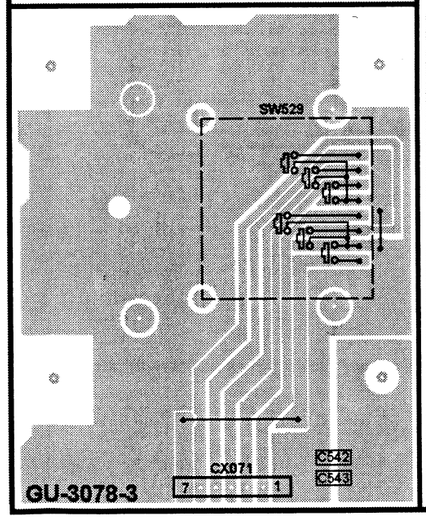


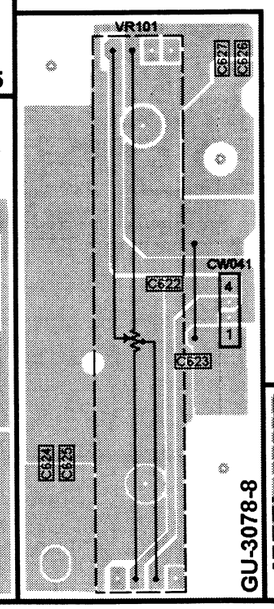


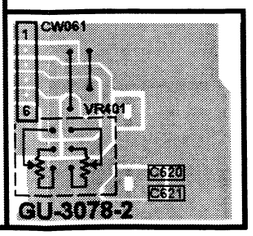




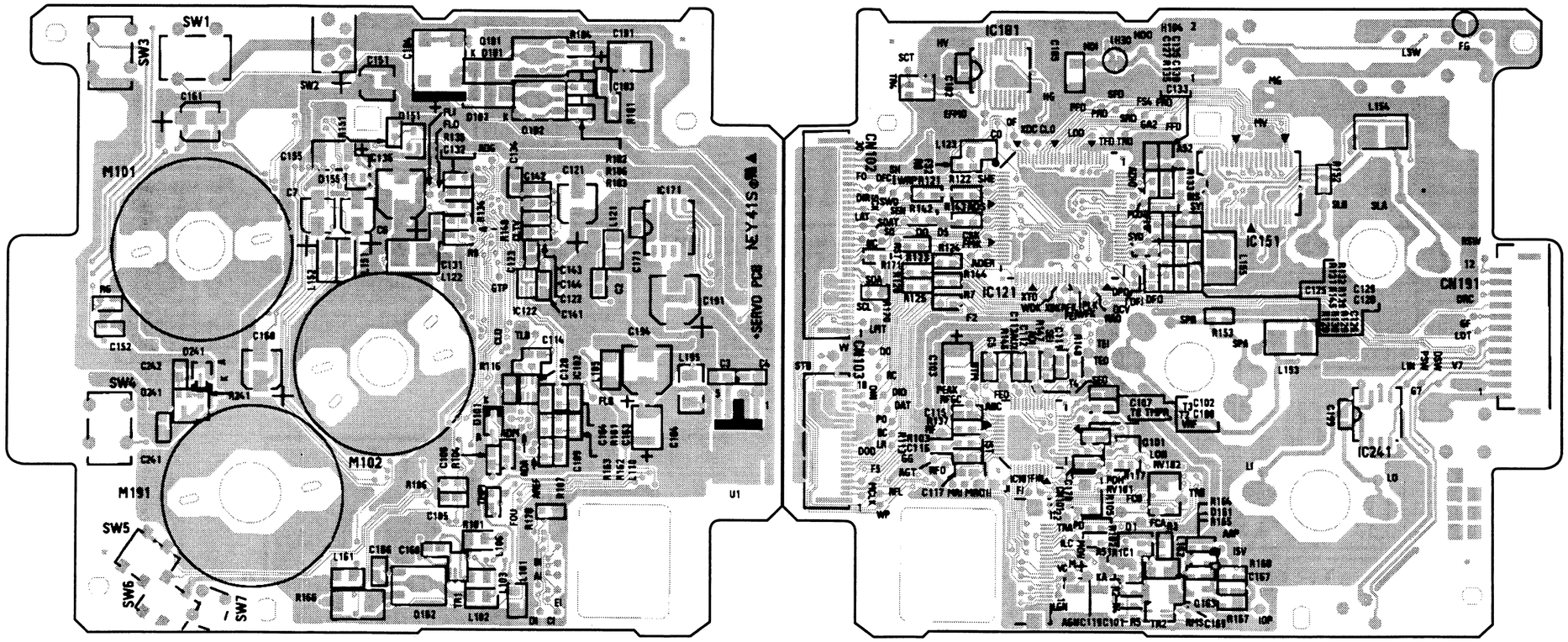








MECHA P.W.B. UNIT



NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:
Parts marked with this symbol ⚠ ▓▓ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: RN (Type) 14K (Shape and performance) 2E (Power) 182 (Resistance) G (Allowable error) FR (Others)

RD : Carbon RC : Composition RS : Metal oxide film RW : Winding RN : Metal film RK : Metal mixture	2B : 1/8W 2E : 1/4W 2H : 1/2W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse-resistor F : Lead wire forming

*** Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
- 2: Indicates number of zeros after effective number.
- 18: 2-digit effective number.

• Units: ohm

1 R 2 ⇒ 1.2 ohm
- 2: 1-digit effective number.
- 1R: 2-digit effective number, decimal point indicated by R.

• Units: ohm

● Capacitors

Ex.: CE (Type) 04W (Shape and performance) 1H (Dielectric strength) 2R2 (Capacity) M (Allowable error) BP (Others)

CE : Aluminum foil electrolytic CA : Aluminum solid electrolytic CS : Tantalum electrolytic CQ : Film CK : Ceramic CC : Ceramic CP : Oil CM : Mica CF : Metallized CH : Metallized	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 2A : 100V 2B : 125V 2C : 160V 2D : 200V 2E : 250V 2H : 500V 2J : 630V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20% Z : +80% −20% P : +100% −0% C : ±0.25pF D : ±0.5pF = : Others	HS : High stability type BP : Non-polar type HR : Ripple-resistant type DL : For change and discharge HF : For assuring high frequency U : UL part C : CSA part W : UL-CSA type F : Lead wire forming

*** Capacity (electrolyte only)**

2 2 2 ⇒ 2200μF
- 2: Indicates number of zeros after effective number.
- 22: 2-digit effective number.

• Units: μF.

2 R 2 ⇒ 2.2μF
- 2: 1-digit effective number.
- 2R: 2-digit effective number, decimal point indicated by R.

• Units: μF.

*** Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF=0.0022μF
- 2 (More than 2): Indicates number of zeros after effective number.
- 22: 2-digit effective number.

• Units: μF.

2 2 1 ⇒ 220pF
- 1 (0 or 1): Indicates number of zeros after effective number.
- 22: 2-digit effective number.

• Units: pF.

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

PARTS LIST OF P.W.B. UNIT ASS'Y

GU-3077 MAIN P.W.B. UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	262 2333 904	IC HM5116400ATS-7	
IC102	262 2470 003	IC RHD64F3048F16	
IC103	262 2358 905	IC HM62256BLFP-8T	
IC104	205 0488 036	32P IC socket	
IC105	262 2360 003	IC CXD2536CR	
IC106	262 1647 905	IC MN1382-S(TX)	
IC107	262 2363 903	IC S-24C04AFJ	
IC108	205 0488 036	32P IC socket	
IC108	GEN 4143	IC SYSTEM ROM SUB ASS'Y	
IC109	262 2395 007	IC MN1020015-1	
IC111	262 1637 902	IC TC74HC139AF	
IC116~118	262 2361 905	IC TC74AC163FP	
IC121	262 1356 908	IC PC74HC4046AT-T	
IC122	263 0615 902	IC BA15218F	
IC123	262 1816 901	IC NJU3713GT1	
IC124~126	262 2361 905	IC TC74AC163FP	
IC127	262 1881 907	IC HD74AC74FP-TR	
IC128	262 2019 901	IC TC7W74F	
IC129	262 1205 907	IC TC74HCU04AF	
IC301,302	263 0934 900	IC BA4510F	
IC304	262 1765 900	IC SM5841BS	
IC308,309	262 1409 004	IC PCM61P-L	
IC310	262 2426 905	IC AK5351-VF	
IC403,404	263 0615 902	IC BA15218F	
IC412	263 0809 006	IC NJM7805FA(S)	
IC413	263 1056 007	IC UPC2406AHF	
IC414	263 0809 006	IC NJM7805FA(S)	
IC415	263 0432 907	IC NJM78L05A	
IC416	263 0722 905	IC NJM79L05AT	
IC417	263 1057 006	IC UPC2412AHF	
IC419	263 0615 902	IC BA15218F	
IC430	262 1953 903	IC TC7WU04F	
IC503	262 1708 909	IC TC74HC138AF	
IC504	262 2367 909	IC NJU3715G	
TR302,303	269 0085 909	Transistor DTC144TK	
TR304	271 0260 905	Transistor 2SA1036K(S/R)	
TR409	269 0156 906	Transistor DTA124XKA	
TR410	269 0082 902	Transistor DTC114EK	
TR412	272 0083 004	Transistor 2SB1185(E/F)	
TR501	269 0082 902	Transistor DTC114EK	
D100,101	276 0438 910	Diode MA151A	
D102,103	276 0625 901	Diode HVU17	
D184	276 0625 901	Diode HVU17	
D204	276 0438 910	Diode MA151A	
D405	276 0438 910	Diode MA151A	
D409	276 0338 007	Diode S4VB20F	
D410	276 0405 901	Diode S1WB(A)10	
D411,412	276 0550 908	Diode 1SR139-200	
D413	276 0438 910	Diode MA151A	
D414	276 0405 901	Diode S1WB(A)10	
D501~509	276 0438 910	Diode MA151A	
D511~514	276 0438 910	Diode MA151A	
ZD401	276 0645 981	Zener diode MTZJ39A	39V
ZD402	276 0465 909	Zener diode HZS7B-1TD	
LD501	393 9543 910	LED SLR-325MC (GRN)	
LD503~505	393 9543 910	LED SLR-325MC (GRN)	
LD506	393 9543 923	LED SLR-325DC (ORG)	
LD509	393 9543 910	LED SLR-325MC (GRN)	
LD511	393 9543 910	LED SLR-325MC (GRN)	
LD515~519	393 9543 910	LED SLR-325MC (GRN)	
LD522,523	393 9543 910	LED SLR-325MC (GRN)	
LD525	393 9543 907	LED SLR-325VC (RED)	
LD527	393 9543 910	LED SLR-325MC (GRN)	
RESISTORS GROUP			
R100	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R101~103	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R104,105	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R106	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R107~109	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R110~121	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R122~127	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R128,129	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R131~133	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R134~144	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R145~147	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R148~156	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R157~163	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R164,165	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R166	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R167	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
R168	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R169	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R170~172	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R173	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R174	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
R175~193	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R194~196	247 0011 960	Carbon chip 56 kohm 1/10W	RM73B--563J
R197~201	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R202~208	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R209~212	247 0011 960	Carbon chip 56 kohm 1/10W	RM73B--563J
R213~216	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R218,219	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R220	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R221	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R222	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R223~225	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J

Ref. No.	Part No.	Part Name	Remarks
R231~240	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R242	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R243	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R244~246	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R247	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
R248	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R249,250	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R251	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R252~261	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R262~264	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R265~269	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R270~273	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
R274~276	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R277	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R278,279	247 0005 976	Carbon chip 200 ohm 1/10W	RM73B--201J
R280~284	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R285	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R286	247 0018 905	Carbon chip 0 kohm 1/10W	RM73B--0R0K
R287	247 0011 928	Carbon chip 39 kohm 1/10W	RM73B--393J
R288	247 0008 986	Carbon chip 3.9 kohm 1/10W	RM73B--392J
R289	247 0010 929	Carbon chip 15 kohm 1/10W	RM73B--153J
R290~292	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R293	247 0010 929	Carbon chip 15 kohm 1/10W	RM73B--153J
R294	247 0009 972	Carbon chip 9.1 kohm 1/10W	RM73B--912J
R295	247 0009 914	Carbon chip 5.1 kohm 1/10W	RM73B--512J
R296	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R297,298	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R301,302	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R303	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R304,305	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R306	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R307,308	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R309	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R310,311	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R312	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R313~316	247 0005 905	Carbon chip 100 ohm 1/10W	RM73B--101J
R317	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R318,319	247 0010 990	Carbon chip 30 kohm 1/10W	RM73B--303J
R341~343	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R344~346	247 0003 949	Carbon chip 22 kohm 1/10W	RM73B--220J
R347	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R351	247 0007 929	Carbon chip 820 ohm 1/10W	RM73B--821J
R352	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R354	247 0013 984	Carbon chip 470 kohm 1/10W	RM73B--474J
R355	247 0012 998	Carbon chip 200 kohm 1/10W	RM73B--204J
R356	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R357	247 0007 929	Carbon chip 820 ohm 1/10W	RM73B--821J
R358	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R365,366	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
R371	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R378	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J

Ref. No.	Part No.	Part Name	Remarks
R379	247 0010 929	Carbon chip 15 kohm 1/10W	RM73B--153J
R380	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R381	247 0008 931	Carbon chip 2.4 kohm 1/10W	RM73B--242J
R382	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R390	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R394	247 0013 984	Carbon chip 470 kohm 1/10W	RM73B--474J
R395	247 0012 998	Carbon chip 200 kohm 1/10W	RM73B--204J
R396	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R399	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
R400	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
R415,416	247 0011 957	Carbon chip 51 kohm 1/10W	RM73B--513J
R417,418	247 0008 986	Carbon chip 3.9 kohm 1/10W	RM73B--392J
R419,420	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R421,422	247 0010 945	Carbon chip 18 kohm 1/10W	RM73B--183J
R423,424	247 0010 990	Carbon chip 30 kohm 1/10W	RM73B--303J
R427,438	247 0008 999	Carbon chip 4.3 kohm 1/10W	RM73B--432J
R433,434	247 0010 990	Carbon chip 30 kohm 1/10W	RM73B--303J
R439,440	247 0010 990	Carbon chip 30 kohm 1/10W	RM73B--303J
R447	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R450	247 0012 998	Carbon chip 200 kohm 1/10W	RM73B--204J
R451	244 2052 902	Metal oxide 2.7 kohm 1W	RS14B3A272JNBS(S)
R452	247 0004 922	Carbon chip 47 ohm 1/10W	RM73B--470J
R460,461	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R462	247 0008 960	Carbon chip 3.3 kohm 1/10W	RM73B--332J
R463	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R470,471	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R472,473	247 0011 928	Carbon chip 39 kohm 1/10W	RM73B--393J
R485,486	247 0005 905	Carbon chip 100 ohm 1/10W	RM73B--101J
R487	247 0008 960	Carbon chip 3.3 kohm 1/10W	RM73B--332J
R488	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R489	247 0002 966	Carbon chip 10 ohm 1/10W	RM73B--100J
R503~512	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
R521~526	247 0005 989	Carbon chip 220 ohm 1/10W	RM73B--221J
VR301,302	211 6093 970	Semi fixed resistor 100 kohm	V06P[illegible]104
CAPACITORS GROUP			
C100	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C101	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z
C102	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C103	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z
C104	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C106	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C107	257 0007 900	Ceramic chip 1000 pF/50V	CC73[illegible]1H102J
C108	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C109	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z
C110	257 0007 900	Ceramic chip 1000 pF/50V	CC73[illegible]1H102J
C111	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C112	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z
C113	257 0007 900	Ceramic chip 1000 pF/50V	CC73[illegible]1H102J
C114	257 0012 966	Ceramic chip 0.01 µF/50V	CK73[illegible]H103Z
C115	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z
C117	254 4299 964	Electrolytic 47 µF/16V	CE04W[illegible]C470M(SRE)
C118	257 0014 935	Ceramic chip 0.1 µF/25V	CK73[illegible]E104Z

Ref. No.	Part No.	Part Name	Remarks
C119	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C120,121	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C122	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C123	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C124	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C125	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C126	257 0003 933	Ceramic chip 30 pF/50V	CC73SL1H300J
C127	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C128,129	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C130	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C131,132	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C133	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C134	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C135	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C136	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C137,138	257 0004 961	Ceramic chip 100 pF/50V	CC73SL1H101J
C139	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C140	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C141	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C142	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C143	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C144	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C145	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C146	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C147	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C148	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C149	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C150	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C151	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C152	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C153	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C154	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C155,156	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C157	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C158	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C159	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C160	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C161-164	257 0004 961	Ceramic chip 100 pF/50V	CC73SL1H101J
C165	257 0001 977	Ceramic chip 5.0 pF/50V	CC73SL1H5R0C
C166	257 0004 961	Ceramic chip 100 pF/50V	CC73SL1H101J
C167,168	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C169	257 0001 977	Ceramic chip 5.0 pF/50V	CC73SL1H5R0C
C170	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C171	254 1035 952	Electrolytic 0.047 µF/50V	CF93A1H474J
C172	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C173,174	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C175	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C176	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C177	257 0011 996	Ceramic chip 0.1 µF/25V	CK73B1E104KT
C178	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C179,180	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C181	257 0001 977	Ceramic chip 5.0 pF/50V	CC73SL1H5R0C

Ref. No.	Part No.	Part Name	Remarks
C182	257 0010 900	Ceramic chip 0.01 µF/50V	CK73B1H103K
C183,184	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C185	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C186	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C187	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C188	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C189	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C190	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C191	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C192	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C193	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C194,195	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C196,197	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C198,199	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C200,201	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C202	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C203	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C204	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C205	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C206,207	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C208,209	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C210,211	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C212	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C213	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C214	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C302	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C306	257 0003 933	Ceramic chip 30 pF/50V	CC73SL1H300J
C307	254 4302 932	Electrolytic 22 µF/10V	CE04W1A220M(SRE)
C308	257 0003 933	Ceramic chip 30 pF/50V	CC73SL1H300J
C309	254 4302 932	Electrolytic 22 µF/10V	CE04W1A220M(SRE)
C310,311	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C312	257 0003 933	Ceramic chip 30 pF/50V	CC73SL1H300J
C313	254 4302 932	Electrolytic 22 µF/10V	CE04W1A220M(SRE)
C314	257 0003 933	Ceramic chip 30 pF/50V	CC73SL1H300J
C315	254 4302 932	Electrolytic 22 µF/10V	CE04W1A220M(SRE)
C316,317	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C318	257 0009 966	Ceramic chip 4700 pF/50V	CK73B1H472K
C319	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C320	254 4299 906	Electrolytic 10 µF/16V	CE04W1C100M(SRE)
C321	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C322	254 4299 906	Electrolytic 10 µF/16V	CE04W1C100M(SRE)
C323	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C324	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C325	257 0009 966	Ceramic chip 4700 pF/50V	CK73B1H472K
C329	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C330	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C332	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C334	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C335	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C337	254 4250 767	Electrolytic 47 µF/16V	CE04W1C2R2MC(SME)

Ref. No.	Part No.	Part Name	Remarks
C338	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C339	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C340	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C341	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C342	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C343	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C344	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C345	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C349~351	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C353,354	257 0014 948	Ceramic Chip 0.22 µF/25V	CK73F1E224Z
C356	254 4302 974	Electrolytic 100 µF/10V	CE04W1A101M(SRE)
C357,358	257 0006 969	Ceramic chip 680 pF/50V	CC73SL1H681J
C359,360	257 0009 979	Ceramic chip 5600 pF/50V	CK73B1H562K
C361~363	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C364~366	257 0003 988	Ceramic chip 47 pF/50V	CC73SL1H470J
C367	254 4300 963	Electrolytic 100 µF/6.3V	CE04W0J101M(SRE)
C368	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C369	257 0003 988	Ceramic chip 47 pF/50V	CC73SL1H470J
C370	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C373	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C376	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C378	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C383	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C384	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C392	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C397,398	254 4300 963	Electrolytic 100 µF/6.3V	CE04W0J101M(SRE)
C402~404	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C406	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C413,414	254 4302 916	Electrolytic 10 µF/10V	CE04W1A100M(SRE)
C417,418	254 4302 974	Electrolytic 100 µF/10V	CE04W1A101M(SRE)
C419	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C420,421	254 4299 964	Electrolytic 47 µF/16V	CE04W1C470M(SRE)
C422	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C423,424	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C425,426	254 4302 974	Electrolytic 100 µF/10V	CE04W1A101M(SRE)
C427,428	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C429	254 4256 952	Electrolytic 220 µF/25V	CE04W1E221M
C448	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C450	254 4302 974	Electrolytic 100 µF/10V	CE04W1A101M(KME)
C452	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C453,454	254 4389 913	Electrolytic 100 µF/10V	CE04W1A101M(KME)
C455,456	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C457	254 4509 007	Electrolytic 12000 µF/25V	CE04W1E123M(SMG)
C458~461	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C462,463	254 4440 904	Electrolytic 100 µF/16V	CE04W1C101M(KME)
C464	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C466	254 4372 713	Electrolytic 1000 µF/35V	CE04W1V102MHRC(KME)
C467	254 4388 710	Electrolytic 1000 µF/16V	CE04W1C102MC(KME)
C468	254 4262 946	Electrolytic 47 µF/63V	CE04W1J470M
C469	254 4262 072	Electrolytic 330 µF/63V	CE04W1J331M
C470,471	254 4389 913	Electrolytic 100 µF/10V	CE04W1A101M(KME)
C487,488	257 0004 903	Ceramic chip 56 pF/50V	CC73SL1H560J

Ref. No.	Part No.	Part Name	Remarks
C489,490	254 4302 974	Electrolytic 100 µF/10V	CE04W1A101M(SRE)
C493,494	254 4299 906	Electrolytic 10 µF/16V	CE04W1C100M(SRE)
C495	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C498	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C499	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C507	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C508	257 2002 961	Tantalum E. 47 pF/ V	CS77B--470M
C509,510	257 0010 900	Ceramic chip 0.01 µF/50V	CK73B1H103K
C511	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C516	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C526	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C528	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C530~533	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
C534~537	257 0012 966	Ceramic chip 0.01 µF/50V	CK73F1H103Z
C540~543	257 0014 935	Ceramic chip 0.1 µF/25V	CK73F1E104Z
CD491,492	257 0010 900	Ceramic chip 0.01 µF/50V	CK73B1H103K

OTHER PARTS GROUP			Q'ty
CN101	205 0339 004	JM jumper connector	1
CX031	205 0343 032	3P connector base (KR-PH)	1
CX041,042	205 0343 045	4P connector base(KR-PH)	2
CX061	205 0343 061	6P connector base(KR-PH)	1
CX072	205 0343 074	7P connector base(KR-PH)	1
CX091	205 0343 090	9 P connector base (KR-PH)	1
CX102	205 0275 003	10P EH connector base	1
CX121	205 0762 024	12P ZR connector base	1
CX181	205 0995 901	18P FFC connector base (0.8)	1
CX271	205 0880 016	27P FFC connector base	1
CX301	205 0995 914	30P FFC connector base (0.8)	1
CX302	205 0892 075	30P FFC base (P=1)	1
CY071	205 0987 032	7P connector socket (9176)	1
CY271	205 0880 016	27P FFC connector base	1
CY302	205 1006 035	30P FFC base (P=1)	1
FB100~104	235 0049 900	Beads inductor	5
FB105	235 0106 908	Chip emifil (21A05)	1
FB301,302	235 0106 908	Chip emifil (21A05)	2
JP101	205 0341 018	3P RE header	1
L101	235 0107 910	Inductor 0.68 µH	1
L102	235 0107 923	Inductor 1.2 µH	1
L103	235 0107 965	Inductor 0.56 µH	1
LF304,305	235 0086 905	EMI filter	2
S501~506	212 5604 907	Tact switch -TA (ALPS)	6
S509~513	212 5604 907	Tact switch -TA (ALPS)	5
S515~528	212 5604 907	Tact switch -TA (ALPS)	14
SW530	212 0387 009	Rotary encorder - jog	1
X101	399 0359 907	Ceramic 10.0MHz	1
X102	399 0239 904	Crystal 45.1584 MHz	1
X103	399 0219 021	Crystal 12.288 MHz	1
	417 0476 049	Radiator	2
	471 3304 015	Screw 3 x 8 CBS-Z	2
	513 8013 003	P-ROM seal	1

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Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC501,502	262 1954 902	IC M66004FP	
TR601~608	274 0160 907	Transistor 2SD2144STPU	
FL501	393 8025 002	FLD BJ558G	
RESISTORS GROUP			
R501,502	247 0010 987	Carbon chip 27 kohm 1/10W	RM73B--273J
R601,602	247 0003 965	Carbon chip 27 ohm 1/10W	RM73B--270J
R603~606	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
R607	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R609,610	247 0003 965	Carbon chip 27 ohm 1/10W	RM73B--270J
R613	247 0004 977	Carbon chip 75 ohm 1/10W	RM73B--750J
R614~617	247 0006 920	Carbon chip 330 ohm 1/10W	RM73B--331J
R618,619	247 0008 944	Carbon chip 2.7 kohm 1/10W	RM73B--272J
R620,621	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
VR101	211 0849 007	Slide volume (c)	
VR401	211 0854 005	Variable resistor 50 kohm	V0930FA503K
VR601	211 0879 006	Variable resistor 2 kohm	V0920B17FA202K
CAPACITORS GROUP			
C400	253 8014 702	Ceramic 0.01 μF/400V(AC)	CK45F2GAC103MC
C501	257 0014 935	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C502	257 0004 961	Ceramic chip 100 pF/50V	CC73SL1H101J
C503	257 0013 907	Ceramic Chip 0.047 μF/50V	CK73F1H473Z
C504	257 0014 935	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C505	257 0004 961	Ceramic chip 100 pF/50V	CC73SL1H101J
C506	257 0013 907	Ceramic Chip 0.047 μF/50V	CK73F1H473Z
C521	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C522	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C523	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C524	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C528	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C539	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C542,543	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C601,602	257 0010 900	Ceramic chip 0.01 μF/50V	CK73B1H103K
C603	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C604	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C605	257 0014 935	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C607~610	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C611	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C612	254 4254 925	Electrolytic 33 μF/16V	CE04W1C330M
C615	257 0012 966	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C616	257 0008 983	Ceramic chip 1000 pF/50V	CK73B1H102K
C622,623	257 0014 935	Ceramic chip 0.1 μF/25V	CK73F1E104Z

Ref. No.	Part No.	Part Name	Remarks	Q'ty
OTHER PARTS GROUP				
CW033	203 4589 003	3P KR-DS connector cord		
CW041	203 6181 069	4P KR-DS connector cord		
CW042	203 6321 104	4P KR-DS connector cord		
CW061	204 0355 062	6P KR-CON base (L)		
CW072	204 2382 001	7P KR-DS connector cord		
CW092	204 2256 014	9P KR-DS connector cord		
CW102	204 6608 008	10P EH-SCN con. cord		
CX031	205 0453 003	2P VH connector base (L)		1
CX032	205 0606 025	2P wrapping terminal		1
CX071	205 1028 013	7P connector base (9176)		1
CY031	205 0581 056	2P VH connector base		1
FB614	235 0106 908	Chip emifil (21A05)		1
FH401,402	202 0040 909	Fuse clip		4
JK601	204 8264 000	Headphone jack (AU)		1
JK602	204 8507 013	4P pin jack		1
JK603	204 8551 014	1P pin jack (OR)		1
⚠S401	212 0286 003	Power switch		1
SW529	212 0352 018	Jog-shuttle		1
	415 0299 000	Condenser cover	for C-400	1
	461 0961 001	FL spacer		2

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Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	S87 5207 268	IC CXA1981AR	
IC121	9R5 0000 143	IC CXD2535CR	
IC122	S87 5905 860	IC TC7SU04FU	
IC151	S87 5917 960	IC MPC17A38	
IC171	9R5 0000 160	IC 24LC01B	
IC181	262 1955 901	IC TC74ACT540FS	
IC241	263 0994 908	IC BA6287F	
Q1	9C2 2500 602	Transistor 2SA1576	
Q151,TR4	S87 2990 518	Transistor DTC144EU	
Q162	S87 2910 107	Transistor 2SB798	
Q163	S87 2990 512	Transistor DTA144EU	
Q181	S87 2901 875	Transistor 2SJ278MY	
Q182	S87 2901 765	Transistor 2SK1764KY	
Q241	9C2 2520 637	Transistor 2SC4081	
TR1	9R5 0000 159	Transistor UMW1N	
TR2	9R5 0000 158	Transistor UWG5N	
D101	S87 1998 862	Diode 1SS355	
D155	9R5 0000 157	Diode SB007-03Q	
D161	S87 1942 115	Diode MA8027	
D181,D183	9R5 0000 144	Diode F1J6	
D241	9R5 0000 150	Diode UDZS 6.2B	
RESISTORS GROUP			
L110		Resistor 0 ohm	
R1		Resistor 56 kohm	
R2		Resistor 30 kohm	
R3,4		Resistor 1 kohm	
R5		Resistor 82 kohm	
R6		Resistor 100 kohm	
R8		Resistor 470 ohm	
R9		Resistor 100 kohm	
R101		Resistor 3.3 kohm	
R102		Resistor 3 kohm	
R103		Resistor 10 kohm	
R104		Resistor 1 kohm	
R105		Resistor 4.7 kohm	
R106,107		Resistor 470 kohm	
R113		Resistor 3.3 kohm	
R120		Resistor 100 ohm	
R121		Resistor 100 kohm	
R122		Resistor 0 ohm	
R123		Resistor 330 ohm	
R124,125		Resistor 100 ohm	

Ref. No.	Part No.	Part Name	Remarks
R128		Resistor 1.5 kohm	
R129		Resistor 330 ohm	
R130		Resistor 470 ohm	
R131		Resistor 10 kohm	
R132		Resistor 100 kohm	
R133		Resistor 1 Mohm	
R134		Resistor 330 ohm	
R135		Resistor 1.5 kohm	
R136		Resistor 470 ohm	
R137		Resistor 100 ohm	
R139,140		Resistor 47 ohm	
R142,143		Resistor 10 kohm	
R144		Resistor 100 ohm	
R145		Resistor 1 Mohm	
R146		Resistor 330 ohm	
R147		Resistor 100 ohm	
R148		Resistor 680 ohm	
R151		Resistor 100 kohm	
R152,153		Resistor 0 ohm	
R161~163		Resistor 2.2 kohm	
R164		Resistor 680 ohm	
R165		Resistor 100 kohm	
R166	9R5 0000 166	Resistor 10 ohm 1/2W	
R168		Resistor 1 ohm	
R170,171		Resistor 10 kohm	
R181~183		Resistor 47 kohm	
R184		Resistor 0 ohm	
R186		Resistor 0 ohm	
R241		Resistor 560 ohm	
RV101	9R5 0000 152	RVG3A08 47k	
RV102	9R5 0000 151	RVG3A08 3k	
CAPACITORS GROUP			
C1		Cap. 0.1 µF	
C2		Cap. 470 pF	
C3		Cap. 1 µF	
C4		Cap. 0.1 µF	
C5		Cap. 0.22 µF	
C101		F931C106MBA	
C102		Cap. 0.1 µF	
C103		F931C106MBA	
C104		F931C106MBA	
C105		Cap. 0.01 µF	
C106		Cap. 0.001 µF	
C107,108		Cap. 0.01 µF	
C109		Cap. 0.022 µF	
C111		Cap. 0.1 µF	
C112		Cap. 0.01 µF	
C113		Cap. 1 µF	

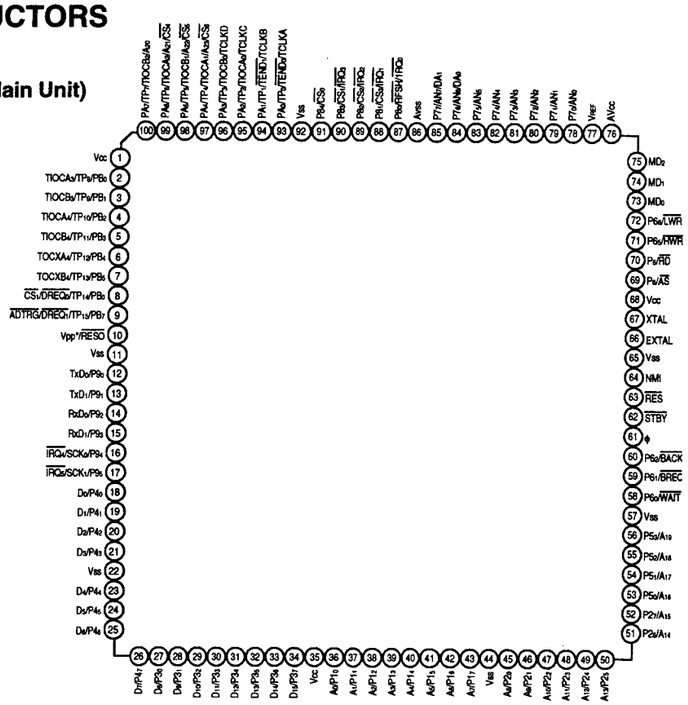
Ref. No.	Part No.	Part Name	Remarks
C114		Cap. 0.22 µF	
C115		Cap. 1 µF	
C116		Cap. 0.0068 µF	
C117		Cap. 0.1 µF	
C119		F931C106MBA	
C121		UWX1C220MCR	
C122		Cap. 0.01 µF	
C123		Cap. 0.1 µF	
C125		Cap. 0.047 µF	
C126		Cap. 1 µF	
C127		Cap. 0.1 µF	
C128		Cap. 0.01 µF	
C129		Cap. 0.47 µF	
C130		Cap. 470 pF	
C131		Cap. 0.047 µF	
C132		Cap. 1 µF	
C133		Cap. 0.0047 µF	
C134,135		Cap. 0.1 µF	
C136		UWX1C101MCR	
C141		Cap. 0.1 µF	
C142~144		Cap. 100 pF	
C151		F931C106MBA	
C152		Cap. 0.1 µF	
C155		F931D685MBA	
C160,161		UWP1C100MCR	
C163,C164		Cap. 0.01 µF	
C166		Cap. 0.001 µF	
C167.168		Cap. 0.1 µF	
C169		F931C106MBA	
C171		Cap. 0.1 µF	
C178		Cap. 0.1 µF	
C181		F931C106MBA	
C182,183		Cap. 0.1 µF	
C184	9R5 0000 165	ECGC0KB220 22u 8V	
C185	9R5 0000 167	Cap. 0.001 µF 500V	
C191		UWX1C101MCR	
C194		UWX1C101MCR	
C199		Cap. 0.1 µF	
C241		Cap. 0.1 µF	
C242		Cap. 1 µF	
C6,7		UWP1H010MCR	

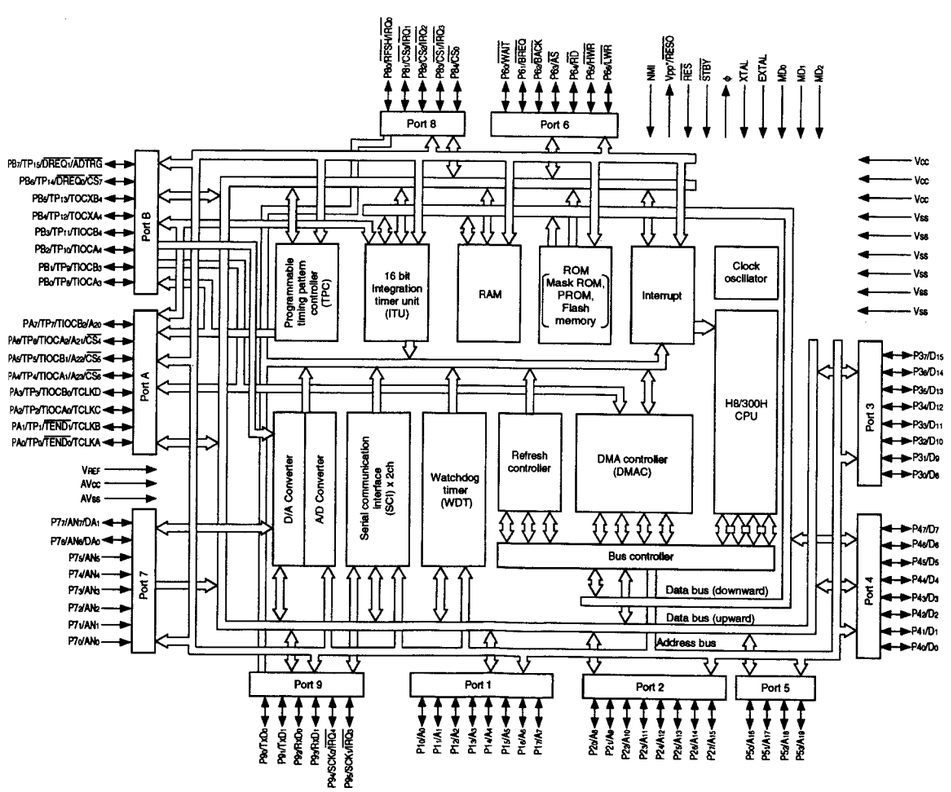
Ref. No.	Part No.	Part Name	Remarks	Q'ty
OTHER PARTS GROUP				
CN101	9R5 0000 161	22FLZ-SM1-TB		1
CN102	9R5 0000 162	SFR30R-1ST		1
CN103	9R5 0000 163	SFR18R-1ST		1
CN191	9R5 0000 164	S12B-ZR-SM3A-TF		1
L101~103	9R5 0000 149	MLF2012A1R0K 1 µH		3
L105	9R5 0000 146	LQH1C100K 10 µH		1
L106	9R5 0000 149	MLF2012A1R0K 1 µH		1
L121	9R5 0000 146	LQH1C100K 10 µH		1
L122	9R5 0000 147	LQH4N101K 100 µH		1
L123	9R5 0000 149	MLF2012A1R0K 1 µH		1
L151,152	9R5 0000 146	LQH1C100K 10 µH		2
L153,154	9R5 0000 147	LQH4N101K 100 µH		2
L155	9R5 0000 148	LQH4N102K 1 mH		1
L161,162	9R5 0000 149	MLF2012A1R0K 1 µH		2
L195	9R5 0000 142	ACF321825-101		1
SW1	9R5 0000 156	SPVF23002A		1
SW3,4	9R5 0000 155	SPVF11006A		2
SW5,6	9R5 0000 154	SPPB53V		2
SW7	9R5 0000 153	SPPB51		1
U1	9R5 0000 145	L88MS05T		1

SEMICONDUCTORS

● IC's

HD64F3048F16 (Main Unit)
(IC102)



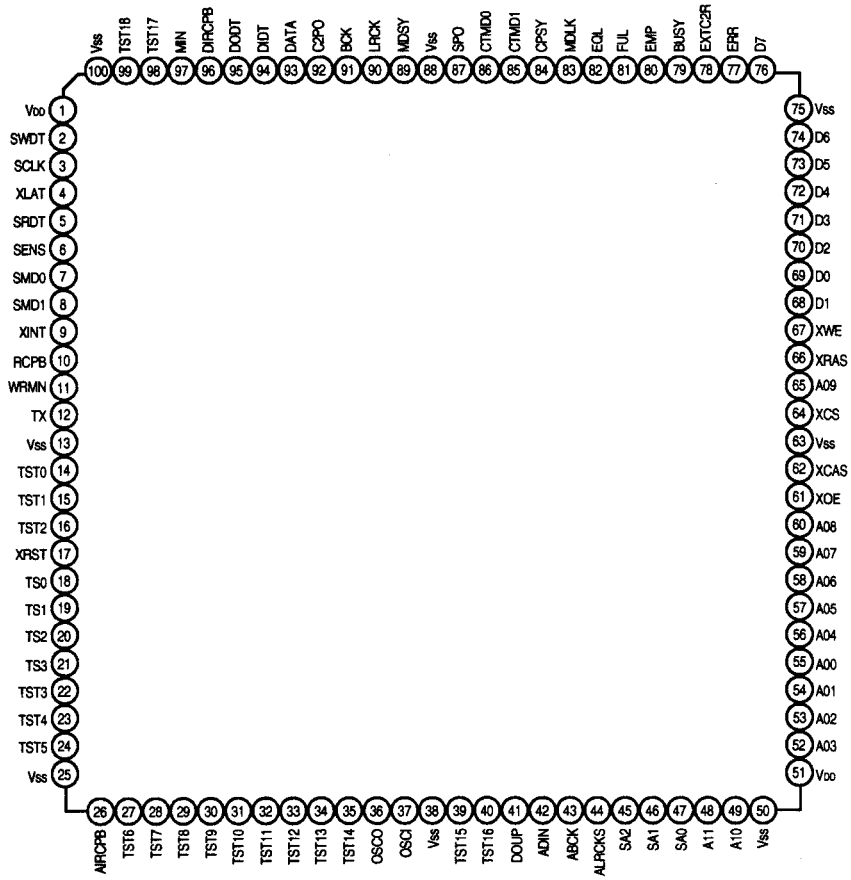


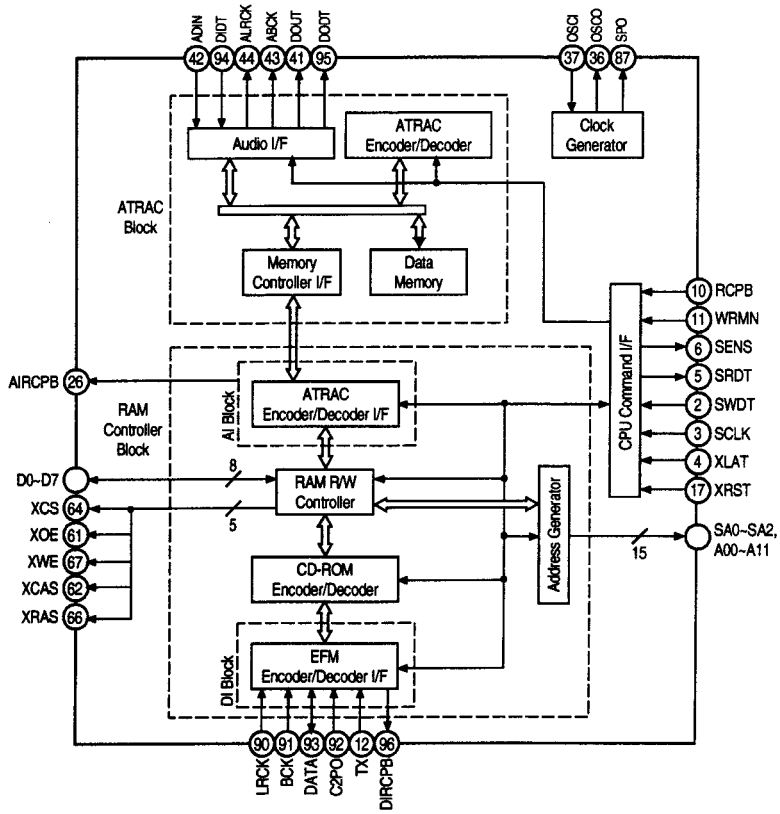
HD64F3048F16 Terminal Function

Pin No.	Terminal Name	Symbol	I/O	Det	Res	Ext	Ini	Function
1	Vcc	Vcc	I	—	—	+5V	—	Connect with power supply (+5V)
2	PB0/TP8/TIOCA3	!TMSYNC	O	—	—	PU	H	Time code sync output (outputs "L" pulse when each audio address is renewed.
3	PB1/TP9/TIOCB3	ACK	O	—	—	PD	L	Ackneledge output for communication between the microcomputer.
4	PB2/TP10/TIOCA4	!DRVTRY	O	—	—	PU	H	Tally out signal output (L: starting).
5	PB3/TP11/TIOCB4	!DLAT	O	—	—	—	H	Latch signal output to digital filter.
6	PB4/TP12/TOCXA4	REC/!PB	O	—	—	—	L	Mode switching signal output (L: playback, H: recording).
7	PB5/TP13/TOCXB4	WRMN	O	—	—	PD	L	Write/Monitor mode switching output (L: monitor, H: write).
8	PB6/TP14/!DREQ0/!CS7	SCTX	O	—	—	PD	L	Enable signal output of data output when recording (H: enable).
9	PB7/TP15/!DREQ1/!ADTRG	!XLAT	O	—	—	PU	H	Latch signal output for peripheral LSI control.
10	!RESO/Vpp	Vpp	I	—	—	PU	—	Reset output/ON port program power supply for writing.
11	Vss	Vss	I	—	—	OV	—	Connect with ground (0V).
12	P90/TxD0	SWDT	O	So	—	PU	H	Serial data output for peripheral LSI control.
13	P91/TxD1	SIN	O	So	—	PU	H	Serial data output for communication between the microcomputer to system microcomputer SIN.
14	P92/RxD0	SRDT	I	Si	—	PU	—	Serial data input for peripheral LSI control.
15	P93/RxD1	SOUT	I	Si	—	PU	—	Serial data input for communication between the microcomputer to system microcomputer SOUT.
16	P94/SCK0/!IRQ4	SCLK	O	Sck	—	PU	H	Serial clock output for peripheral LSI control.
17	P95/SCK1/!IRQ3	UCLK	I	Sck	—	PU	—	Serial clock input for communication between the microcomputer to system microcomputer SCLK.
18	P40/D0	TEST40	O	—	—	NC	H	Non connect
19	P41/D1	TEST41	O	—	—	NC	H	Non connect
20	P42/D2	LDOUT	O	—	—	PD	L	Loader open/Head up signal output (H: ON).
21	P43/D3	LDIN	O	—	—	PD	L	Loader close/Head down signal output (H: ON).
22	Vss	Vss	I	—	—	OV	—	Connect with ground (0V).
23	P44/D4	LDON	O	—	—	PD	L	Laser ON/OFF switching signal output (H: ON).
24	P45/D5	MOD	O	—	—	PD	L	Switching signal output for high frequency superimposed circuit operation (H: ON).
25	P46/D6	WRPWR	O	—	—	PD	L	Laser power swithing signal output (H: recording power,L: playback power).
26	P47/D7	TEST47	O	—	—	NC	H	Non connect
27	D8 (P30)	DD0	I/O	—	—	—	—	Data bus.
28	D9 (P31)	DD1	I/O	—	—	—	—	Data bus.
29	D10 (P32)	DD2	I/O	—	—	—	—	Data bus.
30	D11 (P33)	DD3	I/O	—	—	—	—	Data bus.
31	D12 (P34)	DD4	I/O	—	—	—	—	Data bus.
32	D13 (P35)	DD5	I/O	—	—	—	—	Data bus.
33	D14 (P36)	DD6	I/O	—	—	—	—	Data bus.
34	D15 (P37)	DD7	I/O	—	—	—	—	Data bus.
35	Vcc	Vcc	I	—	—	+5V	—	Connect with power supply (+5V).
36	P10/A0	DA0	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
37	P11/A1	DA1	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
38	P12/A2	DA2	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
39	P13/A3	DA3	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
40	P14/A4	DA4	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
41	P15/A5	DA5	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
42	P16/A6	DA6	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
43	P17/A7	DA7	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output)
44	Vss	Vss	I	—	—	+5V	—	Connect with power supply (+5V).
45	P20/A8	DA8	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
46	P21/A9	DA9	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
47	P22/A10	DA10	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
48	P23/A11	DA11	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
49	P24/A12	DA12	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).

Pin No.	Terminal Name	Symbol	I/O	Det	Res	Ext	Ini	Function
50	P25/A13	DA13	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
51	P26/A14	DA14	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
52	P27/A15	DA15	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
53	P50/A16	DA16	O	—	—	—	—	Address bus (DDR="0": input port, DDR="1": address output).
54	P51/A17	DA17	O	—	—	NC	—	Address bus (Not used).
55	P52/A18	DA18	O	—	—	NC	—	Address bus (Not used).
56	P53/A19	DA19	O	—	—	NC	—	Address bus (Not used).
57	Vss	Vss	I	—	—	OV	—	Connect with ground (0V).
58	P60/!WAIT	TEST60	O	—	—	NC	H	Non connect
59	P61/!BREQ	!ADRST	O	—	—	PD	L	Reset signal output for AD converter.
60	P62/!BACK	!XRST	O	—	—	PD	L	Reset signal output for peripheral LSI.
61	φ	MONI	O	—	—	NC	—	System clock monitor output.
62	!STBY	!STBY	I	—	—	PU	—	Pull up, hardware stand-by mode (not used).
63	!RES	!DRST	I	—	L	—	—	Reset input.
64	NMI	!NMI	I	Ed	—	PU	—	Pull up, non-maskable interrupt (not used).
65	Vss	Vss	I	—	—	OV	—	Connect with ground (0V).
66	EXTAL	EXAL	I	—	—	—	—	Connect with crystal oscillator (10MHz).
67	XTAL	XTAL	I	—	—	—	—	Connect with crystal oscillator (10MHz). (enable to input external clock.)
68	Vcc	Vcc	I	—	—	+5V	—	Connect with power supply (+5V).
69	!AS (P63)	!AS	O	—	—	—	—	Address strob output (L: valid).
70	!RD (P64)	!RD	O	—	—	—	—	Read signal output (L: read).
71	!HWR (P65)	!WR	O	—	—	—	—	Upward byte write signal output (L: valid).
72	!LWR (P66)	!LWR	O	—	—	NC	H	Downward byte write signal output, normally "H".
73	MD0	MD0	I	—	—	PU	—	Operation mode setting input (H: mode 5).
74	MD1	MD1	I	—	—	PD	—	Operation mode setting input (L: mode 5).
75	MD2	MD2	I	—	—	PU	—	Operation mode setting input (H: mode 5).
76	AVcc	Vcc	I	—	—	+5V	—	Connect with power supply (+5V).
77	VREF	Vcc	I	—	—	+5V	—	Connect with power supply (+5V).
78	P70/AN0	RECSW	I	Lv	—	PU	—	Head/Loading position detection signal input.
79	P71/AN1	PLAYSW	I	Lv	—	PU	—	Head/Loading position detection signal input.
80	P72/AN2	LOADSW	I	Lv	—	PU	—	Disc position detection input (L: eject OK).
81	P73/AN3	INSW	I	Lv	—	PU	—	Inner circle SW detection signal input (L: ON).
82	P74/AN4	REFLECT	I	Lv	—	PU	—	Reflection rate detection signal input (L: high reflection).
83	P75/AN5	PROTECT	I	Lv	—	PU	—	Write prohibition detection signal input (L: enable).
84	P76/AN6/DA0	SENS	I	Lv	—	—	—	Sense signal input.
85	P77/AN7/DA1	FOK	I	Lv	—	—	—	Focus OK signal input (H: focus OK).
86	AVss	Vss	I	—	—	OV	—	Connect with ground (0V).
87	P80/!RFSH/!IRQ0	!SYSACK	I	EG	—	PD	—	Communication system microcomputer acknoledge signal input between microcomputer.
88	P81/!CS3/!IRQ1	!DQSY	I	EG	—	—	—	MD format sub code Q sync interrupt input when digital source is CD at SCR, MD of U-bit CD.
89	P82/!CS2/!IRQ2	!XINT	I	EG	—	—	—	CXD-2536 internal status interrupt input.
90	P83/!CS1/!IRQ3	!SQSY	I	EG	—	—	—	Sub Q/ADIP sync interrupt input.
91	P84/!CSO	R/!W	I	Lv	—	PU	—	Trigger signal input when starting communication between microcomonputer (L: starting, L: write/H: read).
92	Vss	Vss	I	—	—	OV	—	Connect with ground (0V).
93	PA0/TP0/!TEND0/TCLKA	SDA	I/O	—	—	PU	H	Serial data input/output for EEPROM control.
94	PA1/TP1/!TEND1/TCLKB	SCL	I/O	—	—	PU	H	Serial clock input/output for EEPROM control.
95	PA2/TP2/TIOCA0/TCLKC	!SHCK	I	EG	—	PU	—	Track out detection signal interrupt input.
96	PA3/TP3/TIOCB0/TCLKD	DIGRST	O		—	PD	L	Reset signal output for CXD2535.
97	PA4/TP4/TIOCA1/!CS6	CSEXROM	O	—	—	PU	H	Chip select signal output for external ROM.
98	PA5/TP5/TIOCB1/!CS5	TESTA5	O	—	—	PU	H	Pull up (Not used)
99	PA6/TP6/TIOCA2/!CS4	CSEXSRAM	O	—	—	—	H	Chip select signal output for external SRAM.
100	PA7/TP7/TIOCB2	DISC IN	I	Lv	—	PU	—	Disc in detection signal input.

CXD2536CR (Main Unit)
(IC105)



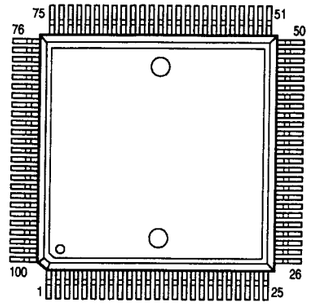


CXD2536CR Terminal Function

Pin No.	Symbol	I/O		Function
1	V_{DD}			Power supply terminal.
2	SWDT	I		Microcomputer serial interface data input.
3	SCLK	I		Microcomputer serial interface shift clock input.
4	XLAT	I		Microcomputer serial interface latch input (L: Latch).
5	SRDT	O	H, Z, L	Microcomputer serial interface data output.
6	SENS	O	H, Z, L	Internal status output terminal according to microcomputer serial interface address.
7	SMD0	I		Control mode of the serial command.
8	SMD1	I		Control mode of the serial command.
9	XINT	O	H, L	Interrupt request output terminal (L: Interrupt status).
10	RCPB	I		H: Recording mode, L: Playback mode.
11	WRMN	I		H: Wirting mode, L: Monitor mode.
12	TX	I		Enable signal input terminal of the recording data output (H: Enable).
13	Vss			Connect with ground.
14	TST0	I		Test terminal, connect with ground.
15	TST1	I		Test terminal, connect with ground.
16	TST2	I		Test terminal, connect with ground.
17	XRST	I		Reset input (L: Reset).
18	TS0	I		Test terminal, connect with ground.
19	TS1	I		Test terminal, connect with ground.
20	TS2	I		Test terminal, connect with ground.
21	TS3	I		Test terminal, connect with ground.
22	TST3	I		Test terminal, connect with ground.
23	TST4	I		Test terminal, connect with ground.
24	TST5	I		Test terminal, connect with ground.
25	Vss			Connect with ground.
26	ALRCPB	O	H, L	ATRAC block recording/playback mode output (H: Recording mode, L: Playback mode).
27	TST6	O		Test terminal, open.
28	TST7	O		Test terminal, open.
29	TST8	O		Test terminal, open
30	TST9	O		Test terminal, open.
31	TST10	O		Test terminal, open.
32	TST11	O		Test terminal, open.
33	TST12	O		Test terminal, open.
34	TST13	O		Test terminal, open.
35	TST14	O		Test terminal, open.
36	OSCO	O		Crystal oscillator circuit output terminal (inverting output of OSCI terminal).
37	OSCI	I		Crystal oscillator circuit input terminal (1024 Fs = 45.1584 MHz).
38	Vss			Connect with ground.
39	TST15	O		Test terminal, open.
40	TST16	O		Test terminal, open.
41	DOUT	O	H, L	REC monitor output/decode audio data output.
42	ADIN	I		Analog recording input terminal (connect with external A/D converter output).
43	ABCK	O	H, L	XBCK (64 Fs) output terminal to the external audio block.
44	ALRCK	O	H, L	LRCK (Fs) output terminal to the external audio block.
45	SA2	O	H, L	SRAM address bus.
46	SA1	O	H, L	SRAM address bus.
47	SA0	O	H, L	SRAM address bus.
48	A11	O	H, L	RAM address bus.
49	A10	O	H, L	RAM address bus.
50	Vss			Connect with ground.
51	V_{DD}			Power supply terminal.
52	A03	O	H, L	RAM address bus.
53	A02	O	H, L	RAM address bus.
54	A01	O	H, L	RAM address bus.
55	A00	O	H, L	RAM address bus.
56	A04	O	H, L	RAM address bus.
57	A05	O	H, L	RAM address bus.
58	A06	O	H, L	RAM address bus.
59	A07	O	H, L	RAM address bus.
60	A08	O	H,L	RAM address bus.
61	XOE	O	H,L	RAM output enable signal.
62	XCAS	O	H,L	DRAM $\overline{CAS}$ output.
63	Vss			Connect with ground.
64	XCS	O	H,L	RAM chip select (H: DRAM, L: SRAM).
65	A09	O	H,L	RAM address bus.
66	XRAS	O	H,L	DRAM $\overline{RAS}$ output.
67	XWE	O	H,L	RAM write enable.
68	D1	I/O	H,L	RAM data bus.
69	D0	I/O	H,L	RAM data bus.
70	D2	I/O	H,L	RAM data bus.
71	D3	I/O	H,L	RAM data bus.
72	D4	I/O	H,L	RAM data bus.
73	D5	I/O	H,L	RAM data bus.
74	D6	I/O	H,L	RAM data bus.
75	Vss			Connect with ground.
76	D7	I/O	H,L	RAM data bus.
77	ERR	I/O	H,L	Data input/output terminal to RAM for C2P0.
78	EXTC2R	I		RAM select signal for C2P0 (H: used, L: Not used).
79	BUSY	O	H,L	RAM access busy signal output (H: RAM access).
80	EMP	O	H,L	Indication signal output when ATRAC data is empty or before the data is full.
81	FUL	O	H,L	Indication signal output when ATRAC data is full or before the data is empty.
82	EQL	O	H,L	ATRAC data empty (H: ASC = DSC).
83	MDLK	O	H,L	Indicats main/sub of recording/playback data (H: sub or linking, L: main).
84	CPSY	O	H,L	Internal sink output.
85	CTMD1	O	H,L	Internal count mode output.
86	CTMD0	O	H,L	Internal count mode output.
87	SPO	O	H,L	512 Fs output.
88	Vss			Connect with ground.
89	MDSY	O	H,L	Sink detection output of main data.
90	LRCK	I		LRCK (Fs) input terminal from FDM encoder/decoder.
91	BCK	I		BCK (64 Fs) input terminal from EFM encoder/decoder.
92	C2PO	I		C2P0 input terminal from EFM encoder/decoder.
93	DATA	I/O	H,L	Data input/output from EFM encoder/decoder.
94	DIDT	I		Digital recording input terminal.
95	DODT	O	H,L	REC monitor output/decode audio data output.
96	DIRCPB	O	H,L	Recording/playback mode output to EFM encoder/decoder (H: recording mode, L: playback mode).
97	MIN	I		External monitor signal input terminal.
98	TST17	I		Test terminal, connect with V_{DD}.
99	TST18	O		Test terminal, open.
100	Vss			Connect with ground.

- Between OSCI and OSCO terminal, incorporated an internal feedback impedance.
- When not using RAM for C2P0 (EXT2CR = "L"), open ERR terminal.
- When XRST terminal is "L", 512 Fs output signal from SPO terminal will be stopped and become L level.

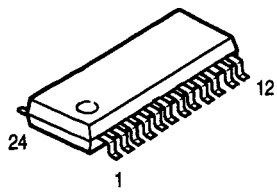
MN1020015-1 (Main Unit)
(IC109)

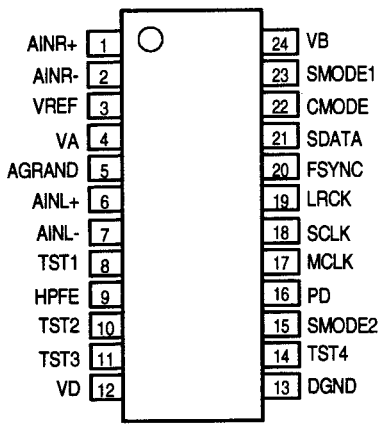


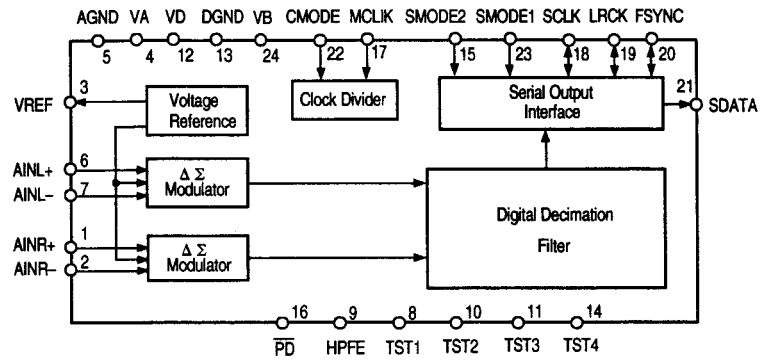
MN1020015 Terminal Function

Pin No.	Terminal Name	Symbol	I/O	DET	Ext	Ini	Res	Function
1	A23	A23	O	—	—	—	L	Address bus 23 (Used as ROM chip select).
2	A22	A22	O	—	—	—	L	Address bus 22 (Used as ROM chip select).
3	A21	A21	O	—	—	—	L	Address bus 21 (Non connection).
4	A20	A20	O	—	—	—	L	Address bus 20 (Non connection).
5	A19	A19	O	—	—	—	L	Address bus 19 (Non connection).
6	A18	A18	O	—	—	—	L	Address bus 18 (Non connection).
7	A17	A17	O	—	—	—	L	Address bus 17.
8	A16	A16	O	—	—	—	L	Address bus 16.
9	A15	A15	O	—	—	—	L	Address bus 15.
10	A14	A14	O	—	—	—	L	Address bus 14.
11	A13	A13	O	—	—	—	L	Address bus 13.
12	A12	A12	O	—	—	—	L	Address bus 12.
13	A11	A11	O	—	—	—	L	Address bus 11.
14	A10	A10	O	—	—	—	L	Address bus 10.
15	A09	A9	O	—	—	—	L	Address bus 09.
16	A08	A8	O	—	—	—	L	Address bus 08.
17	A07	A7	O	—	—	—	L	Address bus 07.
18	A06	A6	O	—	—	—	L	Address bus 06.
19	A05	A5	O	—	—	—	L	Address bus 05.
20	A04	A4	O	—	—	—	L	Address bus 04.
21	A03	A3	O	—	—	—	L	Address bus 03.
22	A02	A2	O	—	—	—	L	Address bus 02.
23	A01	A1	O	—	—	—	L	Address bus 01.
24	A00	A0	O	—	—	—	L	Address bus 00.
25	!RE	!0E	O	—	—	—	—	Read enable output terminal.
26	!WEL	!WEL	O	—	—	—	—	Not used (open).
27	!WHE	!WE	O	—	—	—	—	Write enable output terminal (D08~D15).
28	P00 D00	KI 0	I	Lv	Pu	—	—	Key input 0
29	P01 D01	KI 1	I	Lv	Pu	—	—	Key input 1
30	P02 D02	KI 2	I	Lv	Pu	—	—	Key input 2
31	P03 D03	KI 3	I	Lv	Pu	—	—	Key input 3
32	P04 D04	KI 4	I	Lv	Pu	—	—	Key input 4
33	P05 D05	KI 5	I	Lv	Pu	—	—	Key input 5
34	P06 D06	KI 6	I	Lv	Pu	—	—	Key input 6
35	P07 D07	PUSH	I	Lv	Pu	—	—	Push key input.
36	D08	D0	I/O	—	—	—	—	Data bus 0 (F memory, I/O, SMPTE).
37	D09	D1	I/O	—	—	—	—	Data bus 1 (F memory, I/O, SMPTE).
38	D10	D2	I/O	—	—	—	—	Data bus 2 (F memory, I/O, SMPTE).
39	D11	D3	I/O	—	—	—	—	Data bus 3 (F memory, I/O, SMPTE).
40	D12	D4	I/O	—	—	—	—	Data bus 4 (F memory, I/O, SMPTE).
41	D13	D5	I/O	—	—	—	—	Data bus 5 (F memory, I/O, SMPTE).
42	D14	D6	I/O	—	—	—	—	Data bus 6 (F memory, I/O, SMPTE).
43	D15	D7	I/O	—	—	—	—	Data bus 7 (F memory, I/O, SMPTE).
44	P10 !RAS	SEL 0	O	Lv	Pu	H	H	FLD, LED Key input select signal 0 (Connect to HC138).
45	P11 !CAS0/CS0	SEL 1	O	Lv	Pu	H	H	FLD, LED Key input select signal 1 (Connect to HC138).
46	P12 !CAS1/CS1	SEL 2	O	Lv	Pu	H	H	FLD, LED Key input select signal 2 (Connect to HC138).
47	P13 !CAS2/CS2	ROMDAT	I/O	Lv	Pu	—	H	EEPROM data input/output signal (initial value is for input).
48	P14 !CAS3/CS3	ROMCLK	O	Lv	Pu	H	H	EEROM clock output signal.
49	VSS	VSS	—	—	—	—	—	GND (0v)
50	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
51	!RST	!RST	I	—	—	—	—	Reset input terminal.
52	!BUSRQ	!BUSRQ	I	—	—	—	—	Bus request signal (Not used, fixed at +5.0V)
53	!BUSGT	!BUSGT	O	—	—	—	—	Bus request enable terminal (Not used, open).
54	!WORD	!WORD	I	—	—	—	—	Data bus width selection terminal (8 bit mode, +5V).
55	P20 AD0	ADIN 1	I	Lv		—	—	Pitch position input (AD input).
56	P21 AD1	ADIN 0	I	Lv		—	—	Pitch 0% input (AD input).
57	P22 AD2	RESERVE	I	Lv	Pu	—	—	Not used.
58	P23 AD3	RESERVE	I	Lv	Pu	L	—	Not used.
59	AVDD	AVDD	—	—	—	—	—	Power supply (+5.0V).
60	AVSS	AVSS	—	—	—	—	—	GND (0v)
61	P30 RTOA0	JOG 0	I	Lv	Pu	—	—	Jog input 0.
62	P31 RTOA1/ADTRG	JOG 1	I	Lv	Pu	—	—	Jog input 1.
63	P32 RTOA2/VREFL	AMUTE	O	Lv	Pu	H	H	Analog mute (H : Mute on).
64	P33 RTOA3/VREFH	!DRST	O	Lv	Pd	L	L	Drive microcomputer reset signal (L: reset).
65	P34 RTOB0/AD4	!D. PGM	O	Lv	Pu	H	H	Drive microcomputer program rewriting signal (L: rewriting).
66	P35 RTOB1/AD5	PCSTB	O	Ed	Pu	H	H	Latch signal for pitch control.
67	P36 RTOB2/AD6/TC16C	PLAYSW	I	Lv	—	—	—	Disc set input signal (H : Disc set).
68	P37 RTOB3/AD7/TC17C	PROTECT	I	Lv	—	—	—	Write protect input signal (H : REC prohibit).
69	P40 SB10	!P RST	O	Lv	Pd	L	L	Peripheral LSI reset signal (L : Reset).
70	P41 SB00	RESERVE	O	Lv	Pu	H	H	Not used.
71	P42 SB11	SIN	I	—	Pu	—	—	Receiving line from the microcomputer communication (System microcomputer reference)
72	P43 SB01	SOUT	O	—	—	—	—	Transmitting line to the microcomputer communication (System microcomputer reference)
73	P50 IRQ1/TC106B	ACK	I	Ed	Pu	—	—	ACK input signal from the microcomputer communication (interruption)
74	P51 IRQ1/TC107B	RESERVE	I	—	Pu	—	—	Not used.
75	P52 IRQ3/TC108B	TMSYNC	I	Ed	Pu	—	—	Time code sync input (interruption).
76	P53 IRQ3	RESERVE	I	—	Pu	—	—	Not used.
77	!KI0	!TRSLA	I	Ed	Pu	—	—	Track select pulse input terminal (interruption).
78	!KI1	!TRSLB	I	Ed	Pu	—	—	Track select pulse inverting input terminal (interruption).
79	!KI2	RESERVE	O	Lv	Pd	L	L	Not used.
80	!KI3	!CSEN	O	Lv	Pd	H	L	SEL 0~2 (HC138 output enable).
81	!KI4	R/!W	O	Lv	Pu	H	H	Read/write switching signal for microcomputer communication (H: read).
82	!KI5	SYSACK	O	—	Pd	L	L	System microcomputer ACK output signal for the microcomputer communication.
83	!KI6	CCLK	O	Ed	Pu	H	H	Clock signal for FLD, LED, Pitch control.
84	!KI7	CDAT	O	Lv	Pu	H	H	Data signal for FLD, LED, Pitch control.
85	TCI00	SHTL 0	I	Lv	—	—	—	Shuttle input 0.
86	TCI01	SHTL 1	I	Lv	—	—	—	Shuttle input 1.
87	TCI02	SHTL 2	I	Lv	—	—	—	Shuttle input 2.
88	TCI03/SBT0	SHTL 3	I	Lv	—	—	—	Shuttle input 3.
89	TCI04/SBT1	UCLK	I/O	Ed	Pu	H	H	Clock output for the microcomputer communication.
90	TCI6A	!DRVTRY	I	Lv	Pd	—	—	Drive microcomputer status input.
91	TCI07A	DISCIN	I	Lv	—	—	—	Disc in detection switch (L : Disc set).
92	TCI08A	TRSLC	I	Lv	Pu	—	—	Track select C input.
93	SYSCLK	SYSCLK	O	—	—	—	H	System clock output terminal (a half of OSCI frequency).
94	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
95	!XI	!XI	I	—	—	—	—	GND (0V).
96	X0	X0	O	—	—	—	—	Open.
97	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
98	!OSCI	!OSCI	I	—	—	—	—	System clock input (12.288 MHz).
99	OSCO	OSC0	O	—	—	—	—	System clock output (12.288 MHz).
100	VSS	VSS	—	—	—	—	—	GND (0v).

AK5351-VF (IC310)



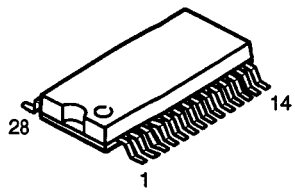


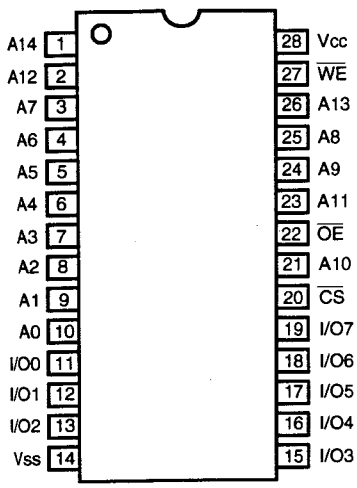


AK5351-VF Terminal Function

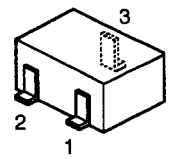
Pin No.	Symbol	I/O	Function
1	AINR+	I	Rch analog positive input pin.
2	AINR–	I	Rch analog negative input pin.
3	VREF	O	Reference voltage output pin.
4	VA	—	Analog part power supply pin (+5V).
5	AGND	—	Analog ground pin.
6	AINL+	I	Lch analog positive input pin.
7	AINL–	I	Lch analog negative input pin.
8	TST1		Test pin, leave it open.
9	HPFE	I	High pass fiter enable pin (H : ON, L : OFF).
10	TST2		Test pin, leave it open.
11	TST3		Test pin, leave it open.
12	VD	—	Digital part power supply pin (+5V).
13	DGND	—	Digital part ground pin.
14	TST4		Test pin, leave it open.
15	SMODE2	I	Interface clock select pin.
16	$\overline{PD}$	I	Power down pin ("L" : Power down).
17	MCLK	I	Master clock input pin CMODE="H":384fs, "L":256fs
18	SCLK	I/O	Serial data clock pin.
19	LRCK	I/O	Input channel select pin.
20	FSYNC	I/O	Frame synchro clock pin.
21	SDATA	O	Serial data output pin.
22	CMODE	I	Master clock select pin "L":MCLK=256fs, "H":MCLK=384fs
23	SMODE1	I	Interface clock select pin.
24	VB	—	Power supply pin (+5V).

HM62256BLFP-8T (IC103)
(Main unit)



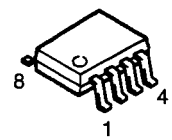


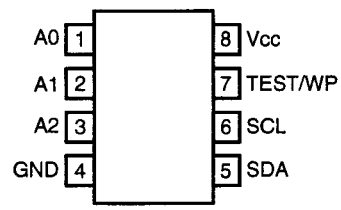
MN1382-S (TX) (IC106)
(Main unit)



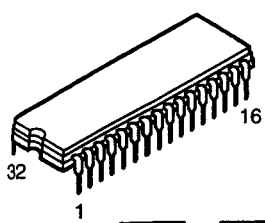
1: GND
2: V_{DD}
3: OUT

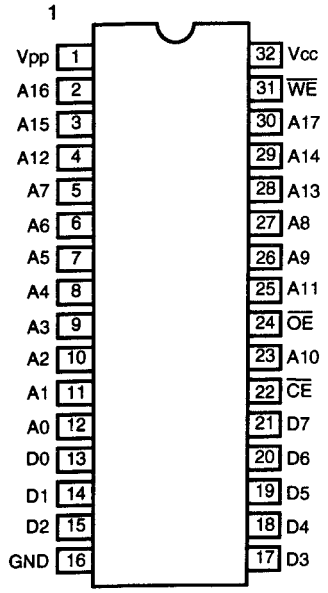
S-24C04AFJ (IC107)
(Main unit)



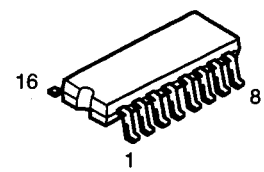


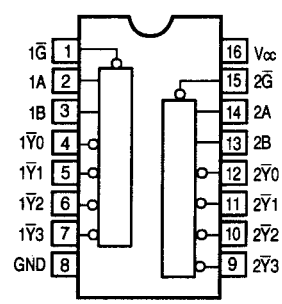
MX28F2000 PPC-90 (IC108)
(Main unit)



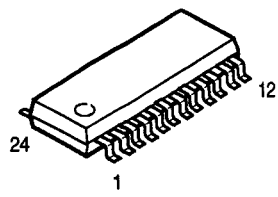


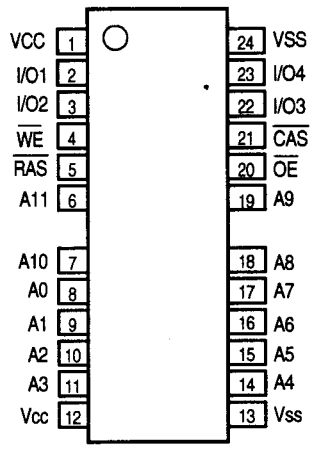
TC74HC139AF (IC111)
(Main unit)



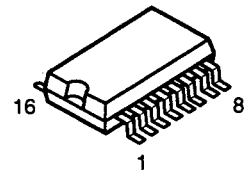


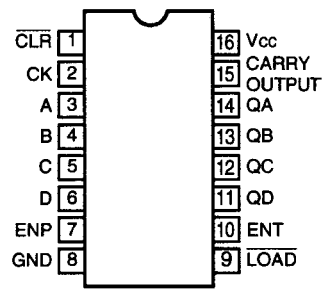
HM5116400ATS-B (Z) (IC101)
(Main unit)

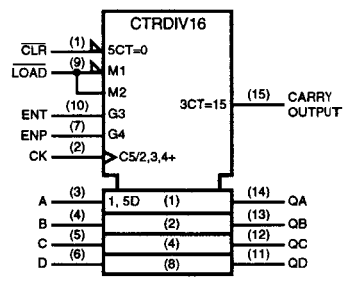




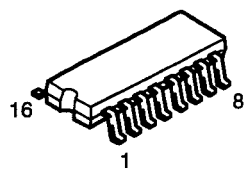
TC74AC163FP
(IC116~118, 124~126)
(Main unit)

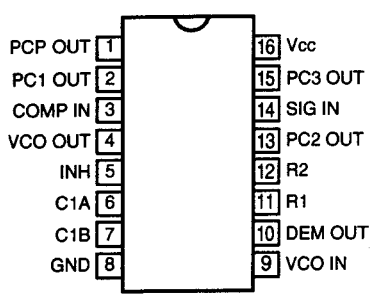




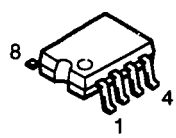


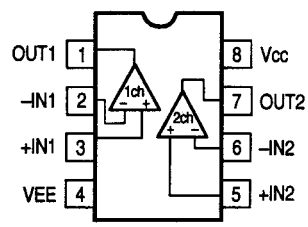
PC74HC4046AT-T (IC121)
(Main unit)



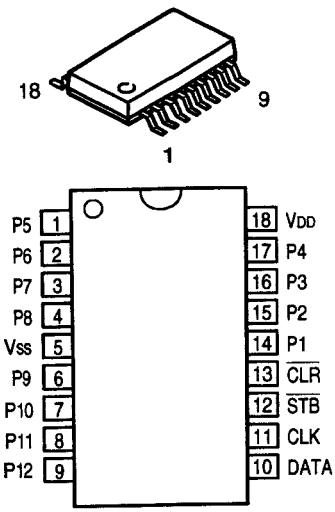


BA15218F
(IC122, 403, 404, 419)
(Main unit)

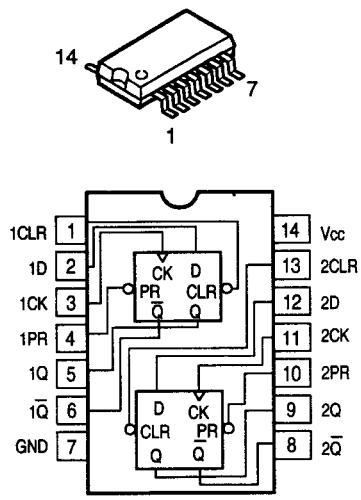




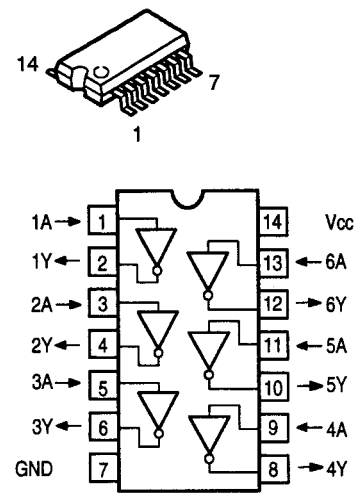
NJU3713GT1 (IC123)
(Main unit)



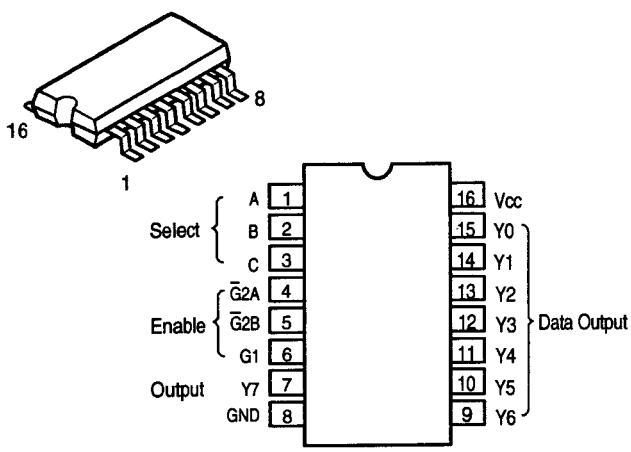
HD74AC74FP (IC127)
(Main unit)



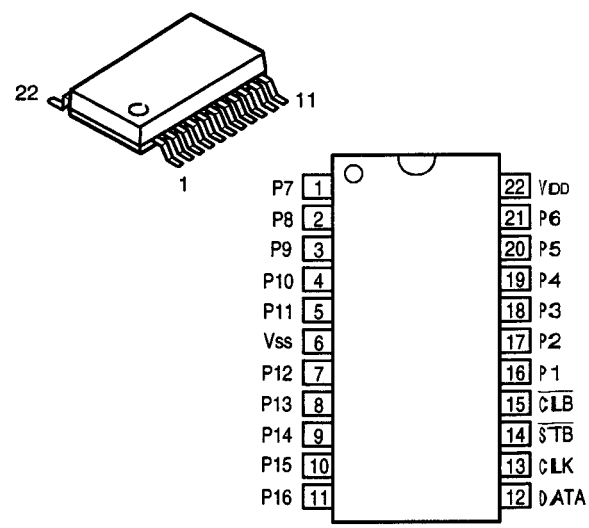
TC74HC04AF (IC129)
(Main unit)



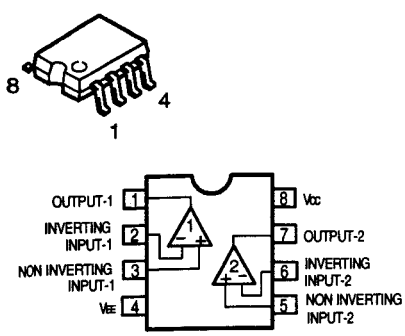
TC74HC138AF (IC503)
(Main unit)



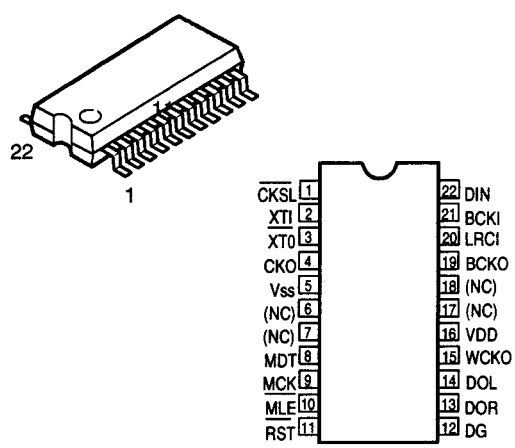
NJU3715G (IC504)
(Main unit)



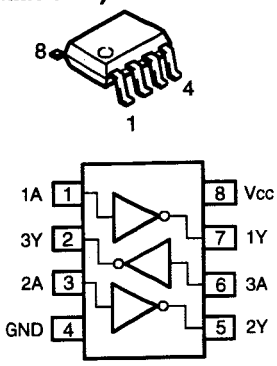
BA4510F (IC301, 302)



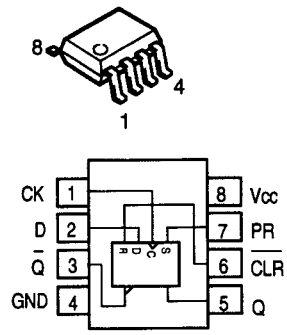
SM5841BS (IC304)
(Main unit)



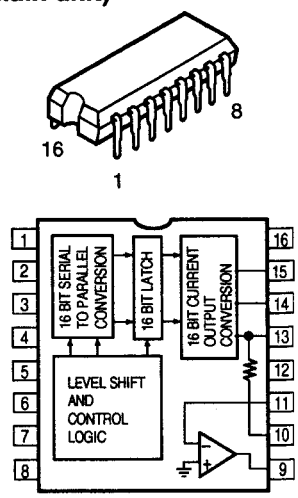
TC7WU04F (IC430)
(Main unit)



TC7W74F (IC128)
(Main unit)

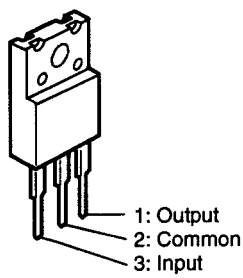


PCM61P (IC308, 309)
(Main unit)

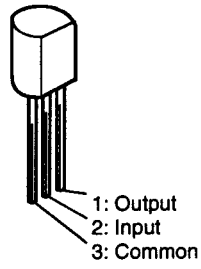


NJM78L05A (IC415)

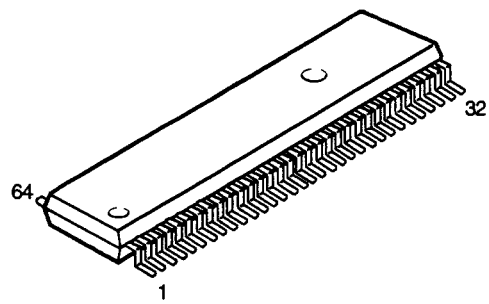
NJM7805FA (S) (IC412, 414)
UPC2406AHF
UPC2412AHF
(Main unit)

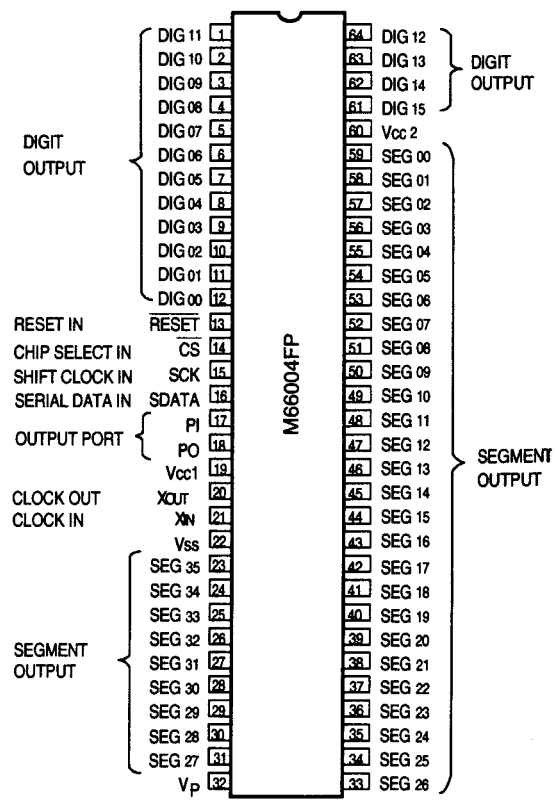


NJM79L05AT (IC416)



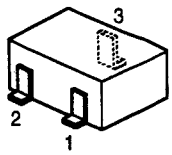
M66004FP (IC501, 502)
(Display/Key unit)





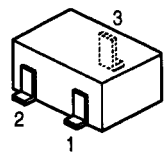
● TRANSISTOR

2SA1036K (S/R)



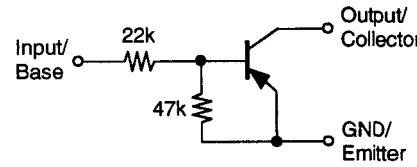
1: GND/Emitter
2: Input/Base
3: Output/Collector

DTA124XKA
DTC114EK
DTC144TK

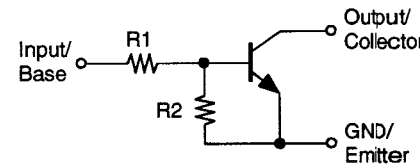


1: GND/Emitter
2: Input/Base
3: Output/Collector

DTA124XKA

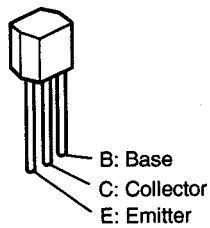


DTC114EK
DTC144TK

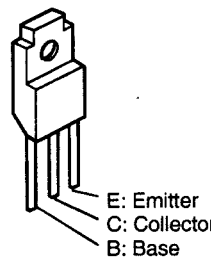


	R1	R2
DTC114EK	10 kohm	10 kohm
DTC144TK	47 kohm	——

2SD2144STPU

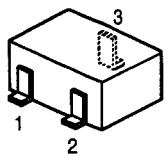


2SB1185 (E/F)

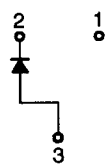


● DIODE & LED

MA151A

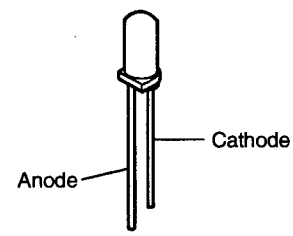


MA151A



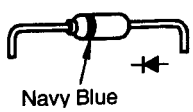
1: NC
2: Cathode
3: Anode

SLR-325VC (RED)
SLR-325MC (GREEN)
SLR-325DC (Orange)

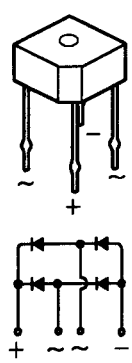


MTZJ39A HZS7B-1

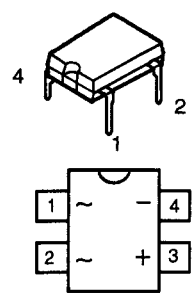
1SR139-200T-62 (D411,412)



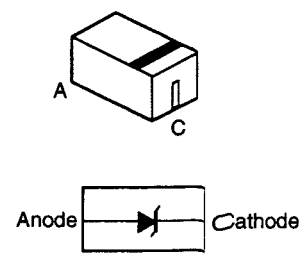
S4VB20F



S1WB(A) 10

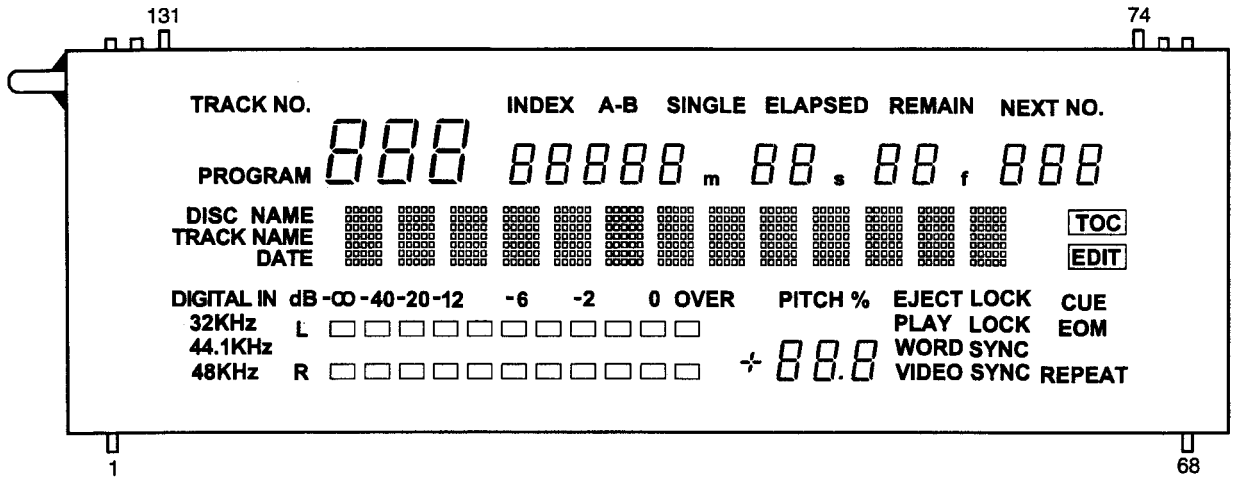


HVU17



● FLUORESCENT DISPLAY TUBE BJ558GK

(Part No: 393 8025 002)



Pin Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Connection	F1	F1	F1	NP	NP	P 35	P 34	P 33	P 32	P 31	P 30	P 29	P 28	P 27	P 26	P 25	P 24	P 23	P 22	P 21	P 20	P 19	P 18	P 17	P 16	P 15	P 14	P 13	P 12	P 11	P 10	P9	P8	P7

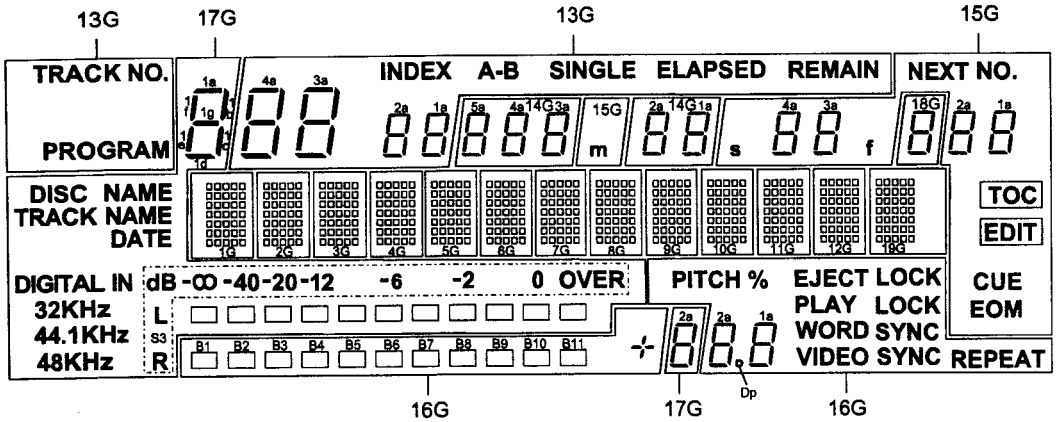
Pin No.	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Connection	P6	P5	P4	P3	P2	P1	NC	NC	NC	NC	19 G	18 G	17 G	16 G	15 G	14 G	13 G	12 G	11 G	10 G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F2	F2	F2

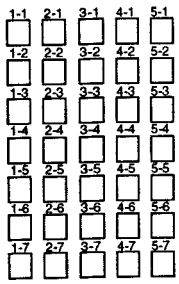
Pin No.	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
Connection	NP	NP	NP	NP	NP	NC	NC	NC	NC	NC	NC	NC	NC	IC	P 36	P 37	P 38	P 39	P 40	P 41	P 42	P 43	P 44	P 45	P 46	P 47	P 48	P 49	P 50	P 51	P 52	P 53	P 54	P 55

Pin No.	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
Connection	P 56	P 57	P 58	P 59	P 60	P 61	P 62	P 63	P 64	P 65	P 66	P 67	P 68	P 69	P 70	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NP	NP	NP	NP	NP

Note: 1) F1, F2 ..... Filament
2) NP ..... No pin
3) NC ..... No connection
4) DL ..... Datum Line
5) 1G~19G ..... Grid
6) IC ..... Internal connection

GRID ASSIGNMENT





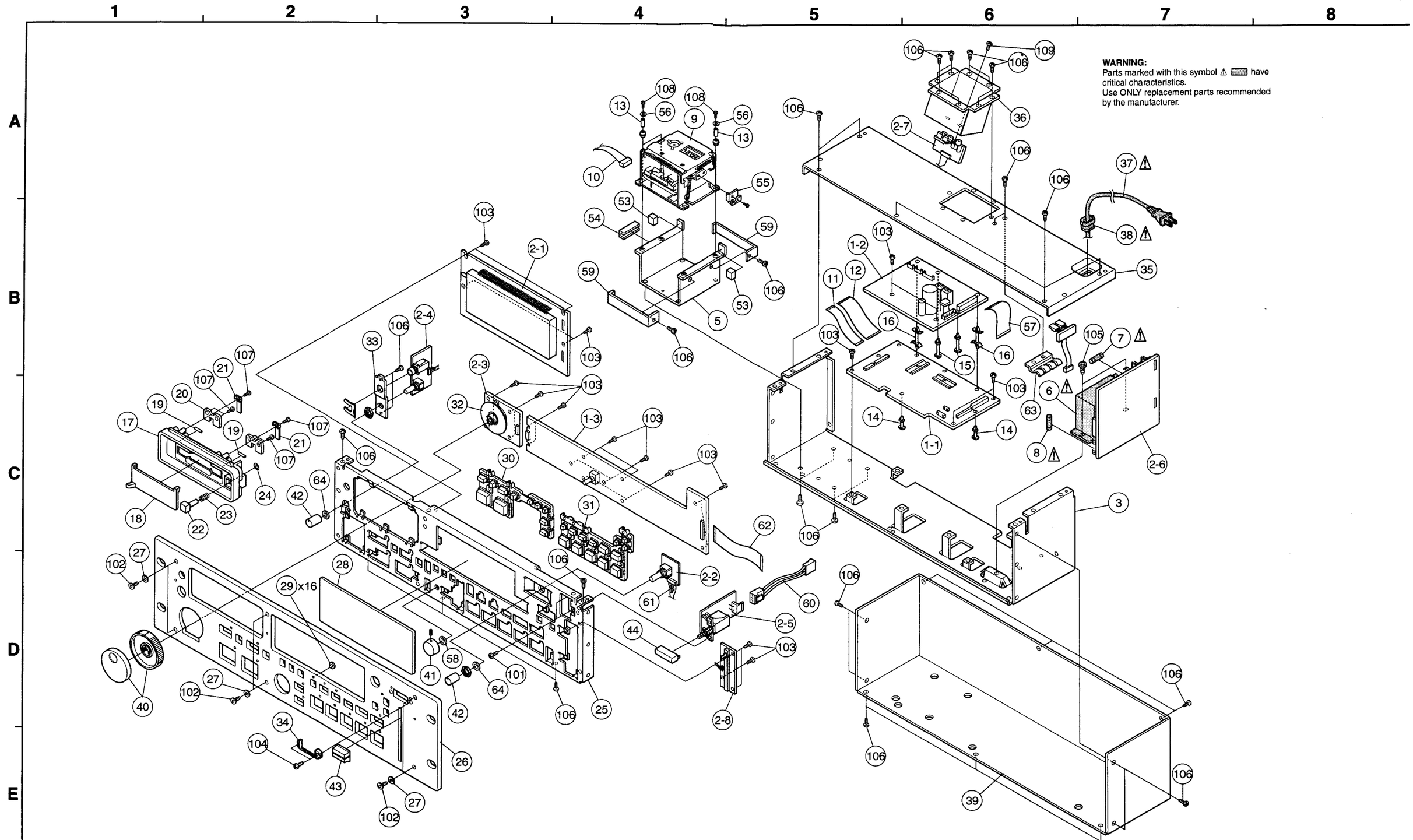
ANODE CONNECTION

	1G~12G	13G	14G	15G	16G	17G	18G	19G
P1	1-1	TRACK NO	—	—	B11	B11	—	1-1
P2	2-1	4d	—	—	B10	B10	—	2-1
P3	3-1	3d	—	—	B9	B9	—	3-1
P4	4-1	2d	—	—	2d	2d	—	4-1
P5	5-1	1d	—	—	1d	1d	—	5-1
P6	1-2	PROGRAM	—	—	B8	B8	—	1-2
P7	2-2	4e	—	—	B7	B7	—	2-2
P8	3-2	3e	—	—	B6	B6	—	3-2
P9	4-2	2e	—	—	2e	2e	—	4-2
P10	5-2	1e	—	—	1e	1e	—	5-2
P11	1-3	INDEX	—	—	B5	B5	—	1-3
P12	2-3	4c	—	—	B4	B4	—	2-3
P13	3-3	3c	—	—	B3	B3	—	3-3
P14	4-3	2c	—	—	2c	2c	—	4-3
P15	5-3	1c	—	—	1c	1c	—	5-3
P16	1-4	A-B	—	—	B2	B2	—	1-4
P17	2-4	4g	—	—	B1	B1	—	2-4
P18	3-4	3g	—	—	S1	DATA	—	3-4
P19	4-4	2g	—	—	2g	2g	—	4-4
P20	5-4	1g	—	—	1g	1g	—	5-4
P21	1-5	SINGLE	—	—	S2	—	—	1-5
P22	2-5	4f	—	—	VIDEO SYNC	DISC NAME	—	2-5
P23	3-5	3f	—	—	REPEAT	TRACK NAME	—	3-5
P24	4-5	2f	—	—	2f	2f	—	4-5
P25	5-5	1f	—	—	1f	1f	—	5-5
P26	1-6	ELAPSED	—	—	—	—	—	1-6
P27	2-6	4b	—	—	—	DIGITAL IN	—	2-6
P28	3-6	3b	—	—	WORD SYNC	32KHz	—	3-6
P29	4-6	2b	—	—	2b	2b	—	4-6
P30	5-6	1b	—	—	1b	1b	—	5-6
P31	1-7	REMAIN	—	—	PLAY LOCK	44.1KHz	—	1-7
P32	2-7	4a	—	—	EJECT LOCK	48KHz	—	2-7
P33	3-7	3a	—	—	PITCH % Dp	S3	—	3-7
P34	4-7	2a	—	—	2a	2a	—	4-7
P35	5-7	1a	—	—	1a	1a	—	5-7

ANODE CONNECTION

	1G~12G	13G	14G	15G	16G	17G	18G	19G
P36	—	—	5d	**m s**	—	—	—	—
P37	—	—	4d	4d	—	—	—	—
P38	—	—	3d	3d	—	—	—	—
P39	—	—	2d	2d	—	—	—	—
P40	—	—	1d	1d	—	—	1d	—
P41	—	—	5e	**f**	—	—	—	—
P42	—	—	4e	4e	—	—	—	—
P43	—	—	3e	3e	—	—	—	—
P44	—	—	2e	2e	—	—	—	—
P45	—	—	1e	1e	—	—	1e	—
P46	—	—	5c	**TOC**	—	—	—	—
P47	—	—	4c	4c	—	—	—	—
P48	—	—	3c	3c	—	—	—	—
P49	—	—	2c	2c	—	—	—	—
P50	—	—	1c	1c	—	—	1c	—
P51	—	—	5g	**EDIT**	—	—	—	—
P52	—	—	4g	4g	—	—	—	—
P53	—	—	3g	3g	—	—	—	—
P54	—	—	2g	2g	—	—	—	—
P55	—	—	1g	1g	—	—	1g	—
P56	—	—	5f	**CUE**	—	—	—	—
P57	—	—	4f	4f	—	—	—	—
P58	—	—	3f	3f	—	—	—	—
P59	—	—	2f	2f	—	—	—	—
P60	—	—	1f	1f	—	—	1f	—
P61	—	—	5b	**EOM**	—	—	—	—
P62	—	—	4b	4b	—	—	—	—
P63	—	—	3b	3b	—	—	—	—
P64	—	—	2b	2b	—	—	—	—
P65	—	—	1b	1b	—	—	1b	—
P66	—	—	5a	**NEXT NO.**	—	—	—	—
P67	—	—	4a	4a	—	—	—	—
P68	—	—	3a	3a	—	—	—	—
P69	—	—	2a	2a	—	—	—	—
P70	—	—	1a	1a	—	—	1a	—

EXPLODED VIEW



PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	GU3077	Main P.W.B. unit		1
1-1	GU-3077-1	Main unit		
1-2	GU-3077-2	Audio power unit		
1-3	GU-3077-3	Key unit		
2	GU3078	FL SW. P.W.B. unit		1
2-1	GU-3078-1	FL unit		
2-2	GU-3078-2	Input VR. unit		
2-3	GU-3078-3	Jog/shuttle unit		
2-4	GU-3078-4	Headphone unit		
2-5	GU-3078-5	Power SW. unit		
2-6	GU-3078-6	Trans. unit		
2-7	GU-3078-7	I/O unit		
2-8	GU-3078-8	Slide unit		
3	411 1374 003	Chassis		1
4	513 2063 004	E2 leser caution	Europe & U.K. models	1
5	412 4314 102	Mecha. bracket		1
⚠ 6	233 6239 006	Power trans.	T401	1
⚠ 7	206 1031 045	Fuse (0.25)A	F401	1
⚠	206 1039 018	Fuse (0.9)A	U.S.A.& Canada models	1
⚠ 8	206 1015 032	Fuse (2.5)A	F402	1
⚠	206 1039 069	Fuse (3.15)A	U.S.A.& Canada models	1
9	337 0055 009	MD mecha. unit DYMA3Z	ALPS	1
10	204 6578 015	12P ZR con. cord	12P wire	1
11	009 0150 009	18P FFC (0.8, AD)	18P FFC	1
12	009 0150 012	30P FFC (0.8, AD)	30P FFC	1
13	443 1445 010	Spacer	for Mecha.	1
14	412 2814 002	Card spacer (L=8)	MPS-08	3
15	412 2814 015	Card spacer (L=14)	MPS-14	2
16	415 0335 032	PCB. support	WLS-14	2
17	146 2044 108	Lid panel		1
18	146 2045 000	Lid		1
19	435 0126 009	Pin		2
20	412 4316 003	Pin holder		2
21	463 0895 005	Plate spring		2
22	113 1667 230	Eject knob		1
23	463 0824 005	Cartridge spring		1
24	475 1157 017	Slit washer T0.5		1
25	441 1848 006	Sub panel		1
26	144 2584 002	Front panel		1
27	475 1178 009	3 washer-B		6
28	146 2043 002	Window		1
29	146 1371 005	LED window		16
30	119 0092 008	Rubber key (1)		1
31	119 0093 007	Rubber key (2)		1
32	461 0840 009	Rubber pad		1
33	412 4315 101	H/P bracket		1
34	146 1661 016	Power SW protector		1
35	105 1264 108	Top panel		1
36	412 4313 006	Jack bracket		1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
⚠ 37	206 2131 009	AC cord with plug	U.K. model	1
⚠	206 2063 009	AC cord with plug	Europe model	1
⚠	206 2151 005	AC cord with plug	U.S.A.& Canada models	1
⚠ 38	445 0047 004	Cord bush (4N-4)	Europe & U.K. models	1
⚠	445 0053 001	Cord bush (6W-1)	U.S.A.& Canada models	1
39	105 1263 109	Cover		1
40	113 1642 019	Jog dial		1
41	112 0526 418	Select kmob A		1
42	112 0555 007	Vol. knob (B)		2
43	113 1523 002	Slide knob		1
44	113 1357 207	Power SW. knob		1
45	513 2737 013	Rating sheet (E2)	Europe & U.K. models	1
	513 2737 000	Rating sheet (E3)	U.S.A.& Canada models	1
46	513 2303 007	Version label		1
47	513 2521 009	CE label		1
48	513 0985 003	Inst. label		1
49	513 2697 001	E3 label	U.S.A.& Canada models	1
50	513 1519 009	Manufac. date label	U.S.A.& Canada models	1
51	513 2696 002	CUL label	U.S.A.& Canada models	1
52	513 8266 009	Dengerous mark	U.S.A.& Canada models	1
53	461 0924 006	Rubber pad		2
54	449 0080 018	Edging		1
55	431 0368 001	Eject plate		1
56	475 0046 015	Washer		4
57	709 0133 026	27P FFC		1
58	122 0228 001	Blind sheet		1
59	461 0924 006	Fix bracket		2
60	203 5132 080	3P VH con. cord		1
61	204 0533 001	6P PH-PH con. cord		1
62	009 0154 005	30P FFC (1.0)		1
63	412 9371 001	Spring plate		1
64	414 0833 007	Spacer		2

SCREWS

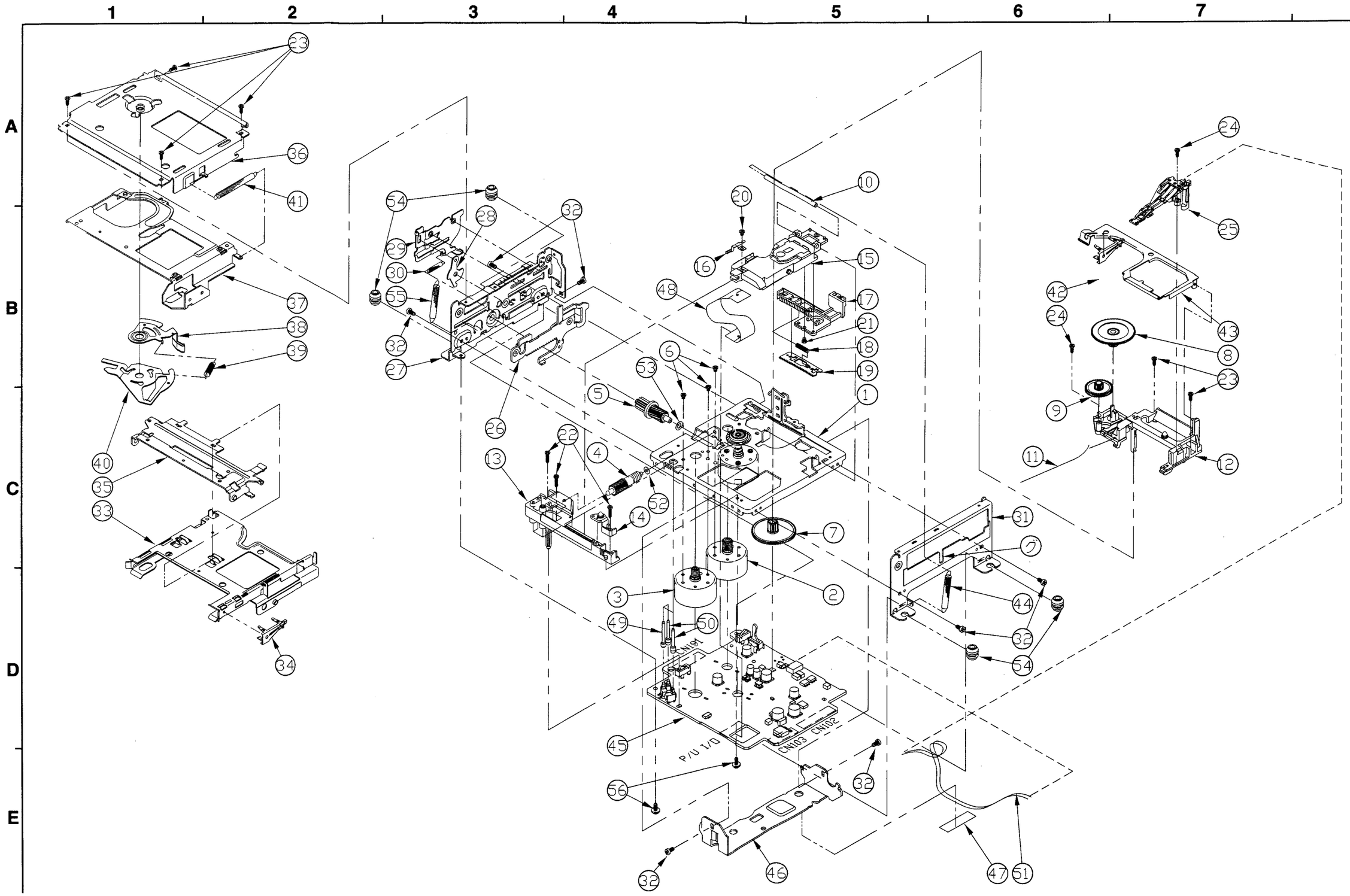
101	471 3303 016	Screw 3 x 6 CBS-Z		2
102	471 9050 020	Screw 3 x 6 FHHS MFZNII-B		6
103	473 7002 005	Screw 3 x 6 CBTS(S)-Z		25
104	473 7002 021	Screw 3 x 8 CBTS(S)-B		4
105	473 7004 016	Screw 4 x 6 CBTS (S)-Z		2
106	473 7015 005	Screw 3 x 6 CBTS(S)-B		38
107	473 7505 010	Screw 2.6 x 6 CBTS(P)-Z		6
108	473 7000 007	Screw 2 x 12 CBTS(S)		4
109	473 7508 017	Screw 3 x 10 CBTS(P)-B		2

PACKING & ACCESSORIES

201	505 8092 007	Laminate envelope		1
202	503 1271 007	Cushion		2
203	505 0038 030	Poly cover		1
204	511 3192 004	Inst. manual		1
205	203 2360 004	2P pin cord		2
206	505 0076 115	Poly. cover		1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
207	461 0911 006	Foot sheet		4
208	501 1982 002	Carton case		1
209	513 2303 007	Version label		2
210	513 1389 006	Control card base		1
211	513 1349 004	Termal carbon film		1
212	517 1331 030	EK POS label	U.K. model	1
213	517 0131 037	E2 POS label	Europe model	1
214	517 1322 007	UPC label	U.S.A.& Canada models	1
215	515 0692 101	DEL warranty com.	U.S.A.& Canada models	1

MD MECHANISM EXPLODED VIEW



PARTS LIST OF MD MECHANISM (DYMA3Z)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	9DD 018S 011	MTR ass'y BLK		1
2	9DD 018S 012	Sled MTR ass'y		1
3	9DD 018S 013	LDG MTR ass'y		1
4	9DD N116 14	2nd worm gear		1
5	9DD N117 12	LDG pinion gear		1
6	9DF G164 15	Screw 1.7 x 2		3
7	9DD N114 12	Sled pinion		1
8	9DD N113 12	2nd gear		1
9	9DD N112 12	1st gear		1
10	9DD L111 11	Shaft P/U		1
11	9DD K112 13	Spindle stabilizer		1
12	9DD D111 14	Rear guide BLK		1
13	9DD D112 15	Front guide		1
14	9DD D115 12	Locator		1
15	9DD V111 11	Pickup unit		1
16	9DD C132 11	P/U keeper		1
17	9DD D114 13	Sled base		1
18	9DD K111 11	Rack slide spring		1
19	9DD C112 12	Rack slider		1
20	9DU G21B 11	Screw 1.7 x 1.6		1
21	9DU G16C 15	Screw 1.7 x 3		1
22	9DU G23V 12	Screw 1.7 x 6		3
23	9DU G23V 11	Screw 1.7 x 4		6
24	9DU G16C 12	Screw 1.7 x 4		2
25	9DD U111 11	O/W head		1
26	9DD C115 53	LDG mode rack gear		1
27	9DD C113 13	Side BKT(L)		1
28	9DD C116 12	Link		1
29	9DD C117 54	Rec. slider		1
30	9DD K114 11	Slider SPG		1
31	9DD C114 13	Side BKT (R)		1
32	9DK G194 34	Screw 2 x 4		6
33	9DD C126 14	Holder		1
34	9DD C120 13	Shutter spring		1
35	9DD C127 14	Holder arm		1
36	9DD C128 12	Top plate		1
37	9DD C129 12	Eject plate		1
38	9DD C130 12	Eject arm		1
39	9DD K121 14	Eject SPG		1
40	9DD C131 12	Lock plate		1
41	9DD K123 11	Recoil SPG		1
42	9DD K119 11	Lifter SPG		1
43	9DD C123 13	HD lifter		1
44	9DD K122 11	Holder A/SPG		1
45	9DD 0160 12	PCB control BLK		1
46	9DD C125 51	Heat shink		1
47	9DE F14U 00	Filament tape	20mm	
48	9DD P113 11	FPC pick		1
49	9DD L113 12	SW knob (L)		1
50	9DD L112 12	SW knob (S)		2
51	9DW G57M 10	Wire (BLK)		2
52	9DF J111 18	Poly. Washer 2.1 x 0.25		1
53	9DF J111 20	Poly. Washer 3.1 x 0.25		1
54	9DD R111 11	Insulator		4
55	9DD K124 11	Holder A/SPG (L)		1
56	9DU G23U 12	TP 2.0 x 5.0 ZU.CH		4
57	9DW G57U 01	Earth lead wire		1

DENON

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Service Manual DA-1
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